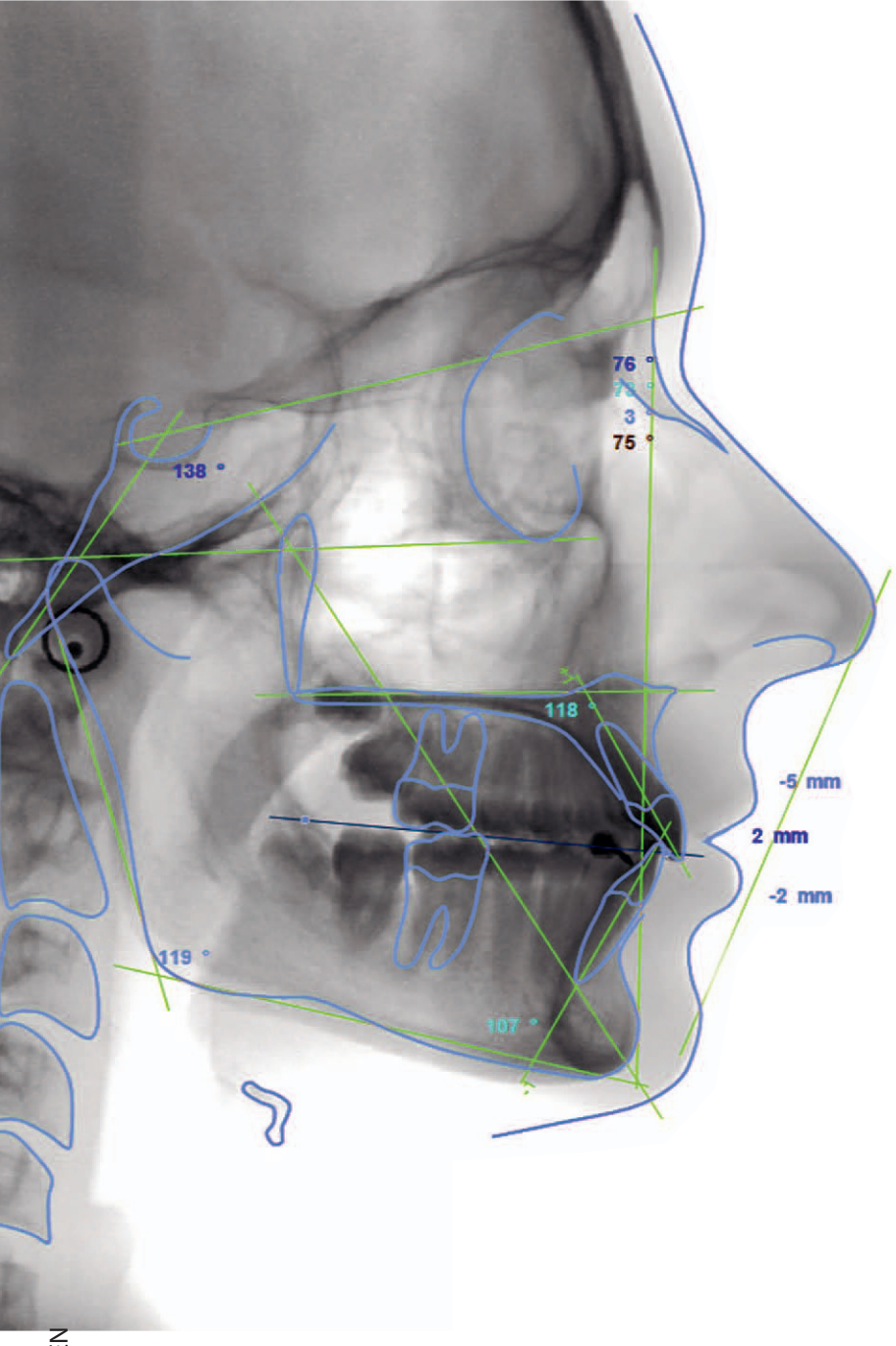
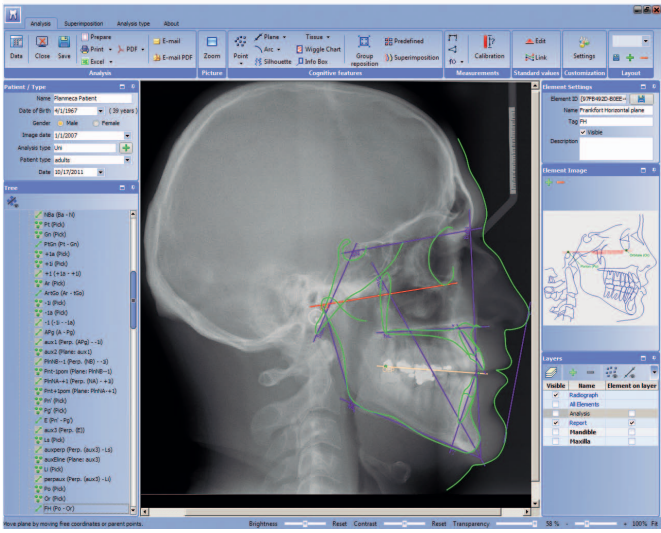




EN

PLANMECA

Romexis

Cephalometric Analysis module

user's manual

10031278_3

1 INTRODUCTION 1

2 STARTING AN ANALYSIS 2

2.1 Accessing Cephalometric Analysis module from Planmeca Romexis 2
2.2 Starting a new analysis 5
2.3 Continuing a previous analysis 7

3 DOCUMENTS TAB 8

3.1 Treatment stages 9
3.2 Superimposition 9
3.3 VTO 10
3.4 Copy to clipboard 10
3.5 File tab 10

4 VIEW SETTINGS 11

4.1 Background 11
4.2 Colour for unmoved elements 11
4.3 Brightness, contrast and transparency 11
4.4 Image size 12
4.5 Adjusting window layout 12

5 USING THE ANALYSIS TOOLS 13

5.1 Layers 13
5.2 Selecting elements 16
5.3 Zooming the image 17
5.4 Element information window 18
5.5 Analysis elements 20
5.6 Wiggle chart 33
5.7 InfoBox settings 34
5.8 Group reposition 36
5.9 Measurements 38
5.10 Calibration 42

6 ANALYSIS SUPERIMPOSITION 44

6.1 Starting a new superimposition 44
6.2 Superimposing photographs over analysis 48
6.3 Manual positioning of images and analyses 49
6.4 Analysis and superimposition relation 50
6.5 Adjusting analysis settings 51
6.6 Exporting superimposed images 52

7 VISUAL TREATMENT OBJECTIVE (VTO) 53

7.1 Making a VTO from analysis (workflow) 53
7.2 Preparing for VTO 54
7.3 Simulation 56

7.4 Saving VTO 62

8 CREATING REPORTS 63

8.1 Creating a report 63
8.2 Saving report as PDF 64
8.3 Automatic report creation 65
8.4 Creating Excel reports 66
8.5 Customising reports 70

9 CREATING A CUSTOM ANALYSIS TYPE 77

9.1 Making an analysis by modifying a previous analysis 77
9.2 Element settings 78
9.3 Creating an analysis from the beginning 80
9.4 Modifying an existing analysis type 80

10 EDITING STANDARD VALUES 81

10.1 Using the buttons in the Standard values window 82
10.2 Linking standard values with analysis measurements 83

11 SHARING AND BACKING UP ANALYSIS TYPES 85

11.1 Backing up instruction for the regular user 85
11.2 Backing up instruction for the admin user 85
11.3 Manually synchronising analysis types to server 86

12 CREATING A CUSTOM ANALYSIS TYPE FROM THE BEGINNING (EXAMPLE) 87

12.1 Choosing phantom 87
12.2 Positioning landmarks 87
12.3 Creating planes 88
12.4 Creating measurements 88
12.5 Creating calculations 89

13 SETTINGS 95

13.1 Settings 95
13.2 Colours 96
13.3 Image formats 97
13.4 E-mail 98

The manufacturer, assembler, and importer are responsible for the safety, reliability and performance of the unit only if:

- installation, calibration, modification and repairs are carried out by qualified authorized personnel
- electrical installations are carried out according to the appropriate requirements such as IEC 60364
- equipment is used according to the operating instructions.

Planmeca pursues a policy of continual product development. Although every effort is made to produce up-to-date product documentation this publication should not be regarded as an infallible guide to current specifications. We reserve the right to make changes without prior notice.

COPYRIGHT PLANMECA

Publication number 10031278 Revision 3

Released 12 May 2014

1 INTRODUCTION

This manual describes how to use the Planmeca Romexis Cephalometric Analysis module.

In the Planmeca Romexis® Cephalometric Analysis module, cephalometric analyses, superimpositions and VTOs (Visual treatment objective) can be composed of 2D cephalometric images, facial photos and views of the dental arch. The analyses are used e.g. in orthodontic growth analysis, diagnosis, treatment planning and monitoring as well as in treatment outcome evaluation.

The Planmeca Romexis Cephalometric Analysis module contains several analysis types including Ricketts, Downs, and Steiner among others. To suit the different needs of dentists, orthodontists or surgeons additional customised analyses can be created.

CE The software is created by Audax d.o.o. and fulfils the requirements of Directive 93/42/EEC.

NOTE This manual is valid for the software revision Planmeca Romexis 3.6.0.R.

NOTE The analyses or analysis types saved with Planmeca Romexis version 3.5.0.R or later are not compatible with previous versions of the software.

NOTE The predefined analysis types that come within the software are created by the software manufacturer upon user requests. Therefore it is recommendable to review the predefined analysis type content before analysis making, to make sure that the predefined version of the analysis type included within the software corresponds to user's view of the respected analysis.

NOTE Regarding compatibility with MS Windows operating systems, refer to Planmeca Romexis installation manual for more information. Planmeca Romexis Cephalometric Analysis module conforms to Windows user interface standards. The Mac OS operating systems are not supported.

NOTE User organization must take care of protecting the computer and the network by using up-to-date virus and malware protection software and fire wall.

NOTE Some screen shots may have been taken in earlier software versions and may not exactly match your screen.

IMPORTANT SAFETY NOTICE!
Planmeca claims no responsibility for the end user's data security or for any malfunction in the computer system that may lead to data loss.

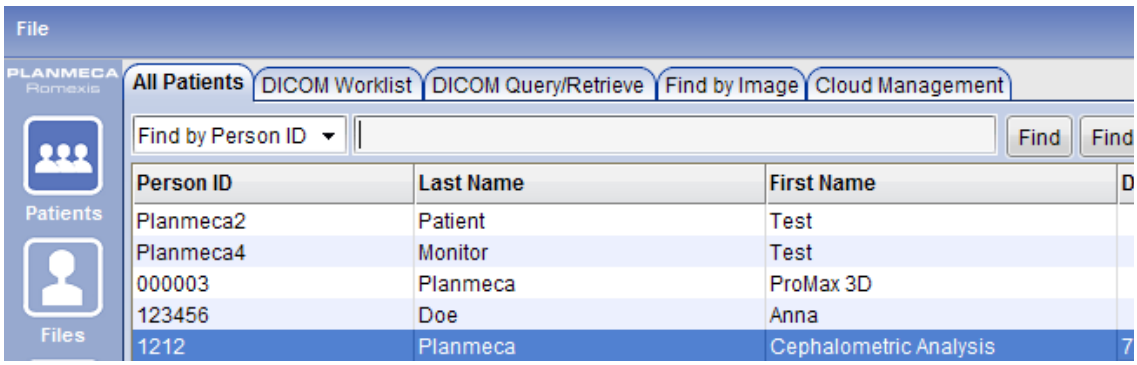
Since image processing and digital subtraction radiography can significantly alter the visibility of both large and small structures (i.e. bone loss and caries), which may result in either too many false positive or false negative findings, Planmeca claims no responsibility for the software use, actions or diagnoses made by the end-user.

The qualities of the monitor can strongly affect the image quality. The monitor qualities change when it gets older.

2 STARTING AN ANALYSIS

2.1 Accessing Cephalometric Analysis module from Planmeca Romexis

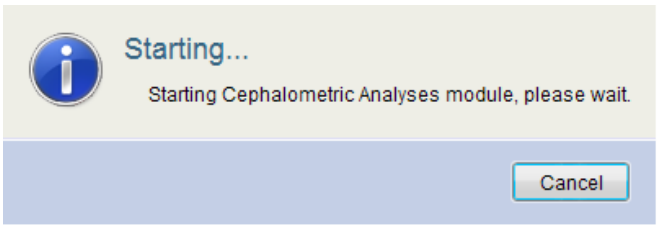
1. Open the patient from the *Patients* module by double-clicking the patient name.



2. Click the **Imaging** button.

3. Click the **Cephalometric Analysis** button on the main tool bar.

   The following window opens..



4. Depending on whether or not the image is opened in the Imaging module, it will open either in the *Documents* tab or in the *Analysis* tab of the Cephalometric Analysis module:

- If the image is **NOT** open in the *Imaging* Module it will open on the *Documents* tab as illustrated below. Continue to section 2 “STARTING AN ANALYSIS” on page 2.

Image is **not** opened in the Imaging module

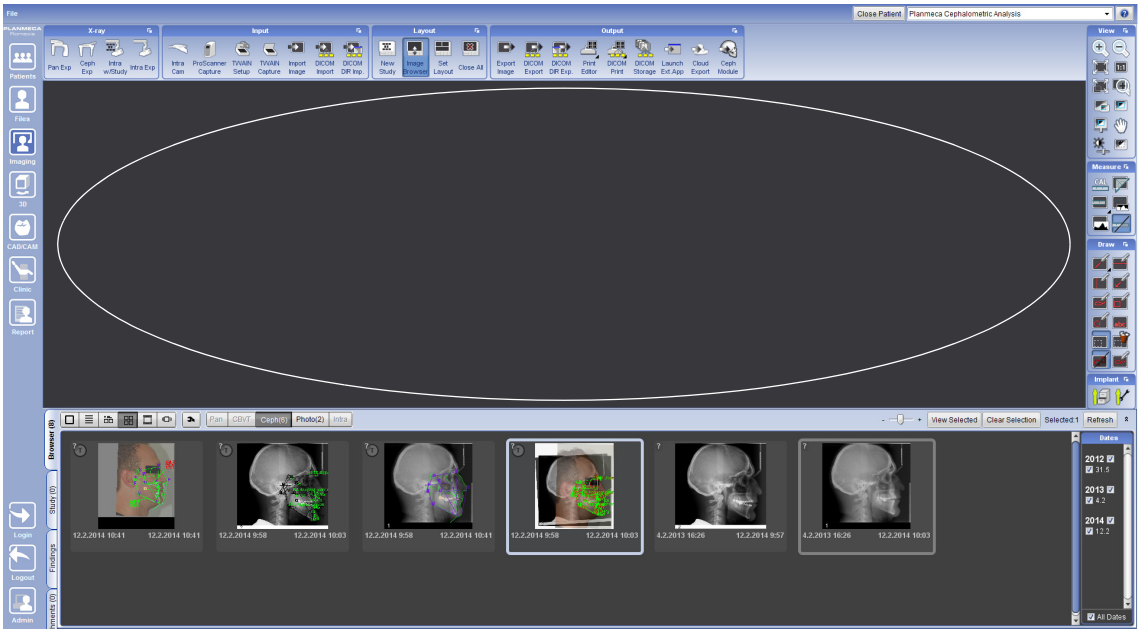
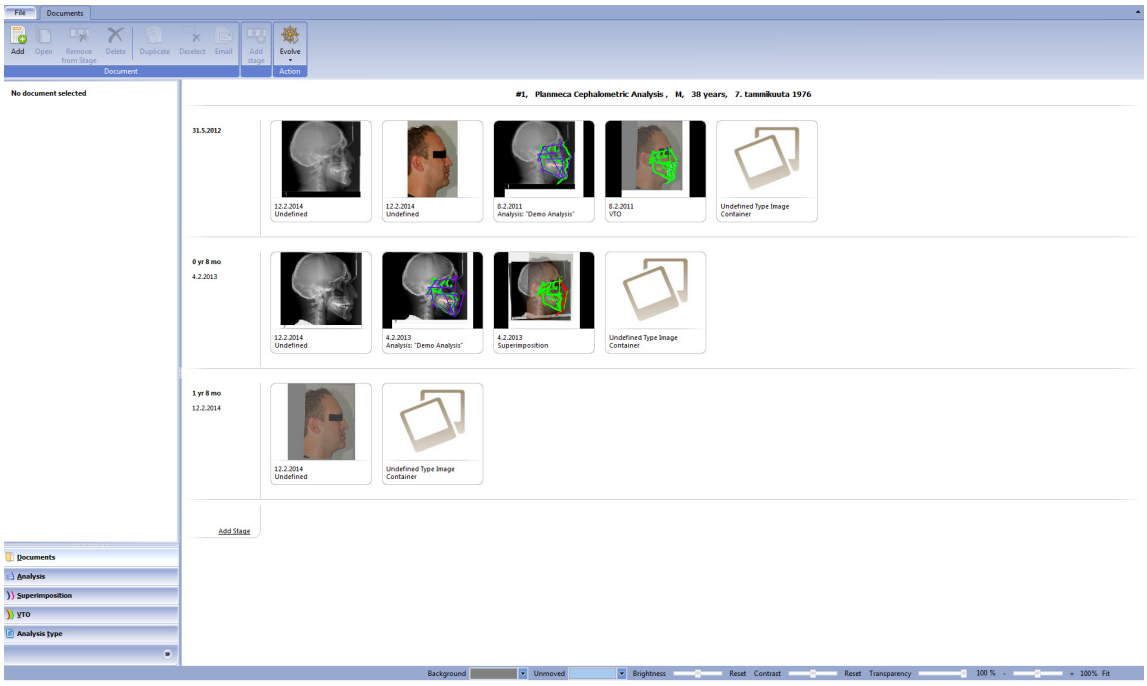


Image opens in *Documents* tab



- If the image in the *Imaging* module is **OPEN** it will open directly in the *Analysis* window as illustrated below. Continue to section 2 “STARTING AN ANALYSIS” on page 2.

Image or photo is open in the *Imaging* module

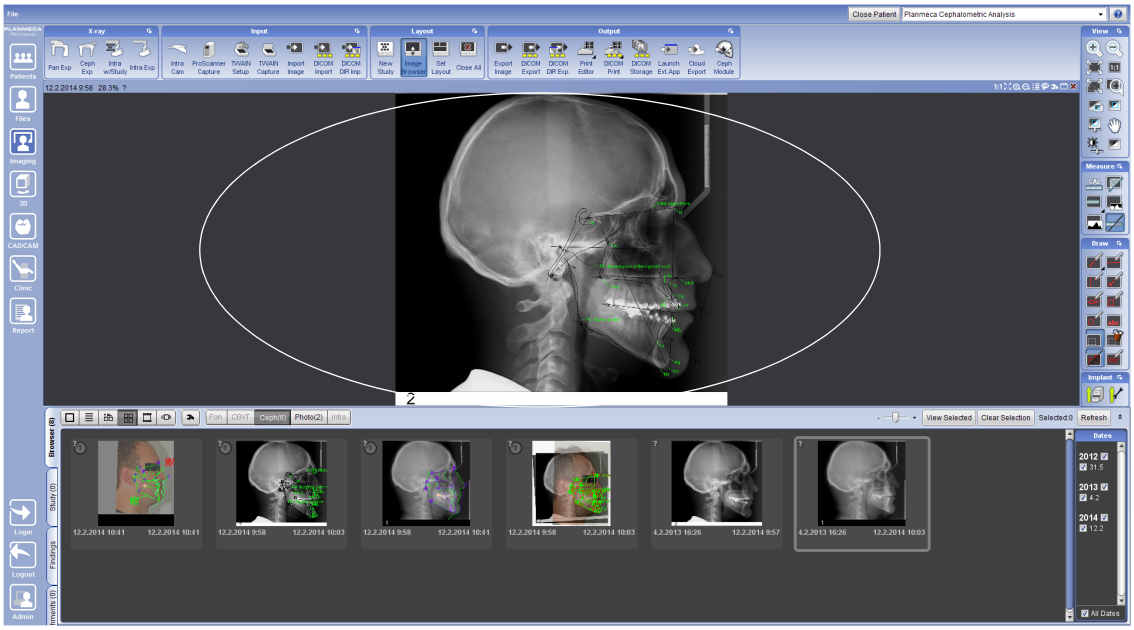
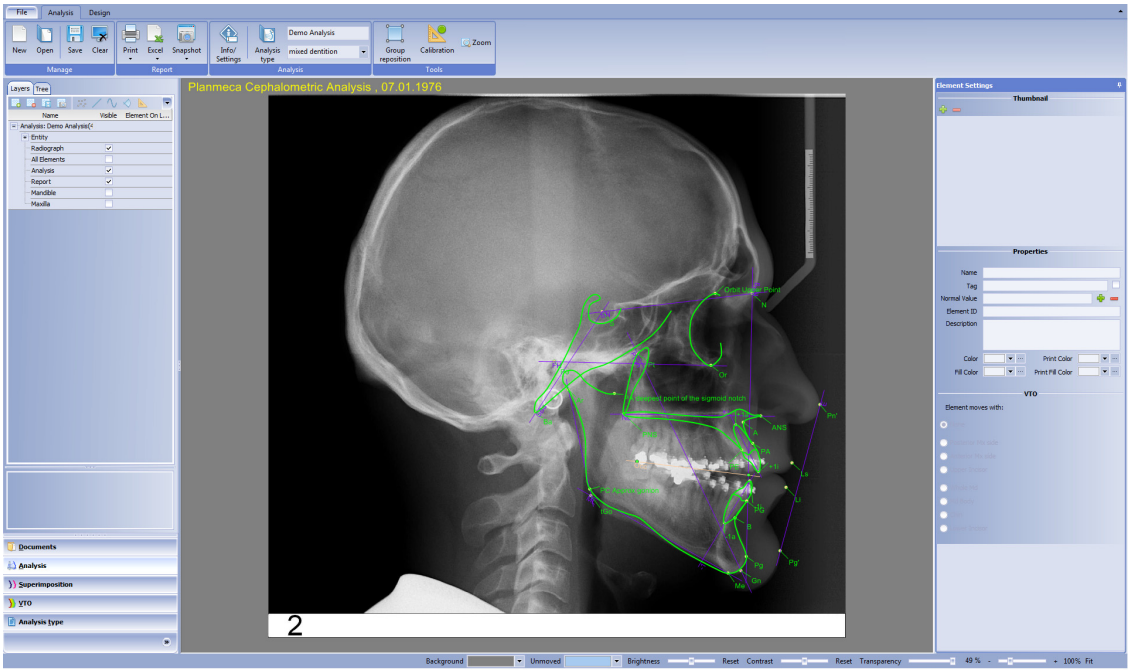
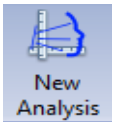


Image opens in the *Analysis* tab

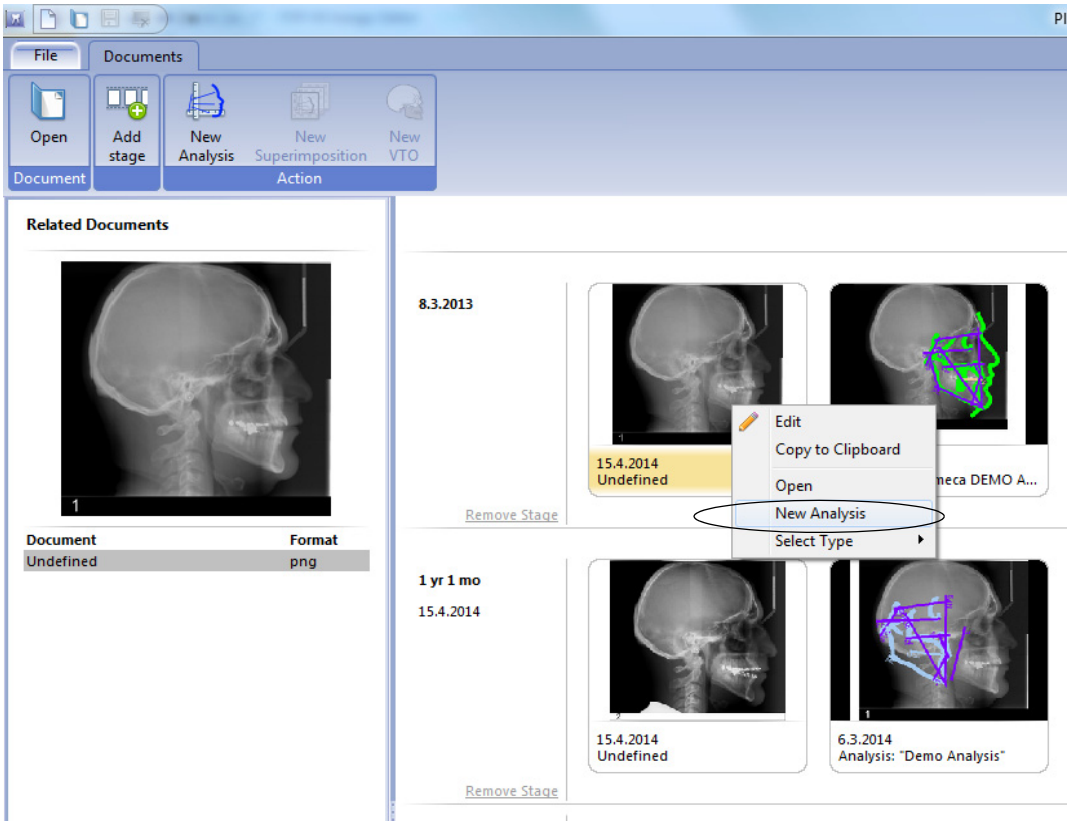


2.2 Starting a new analysis

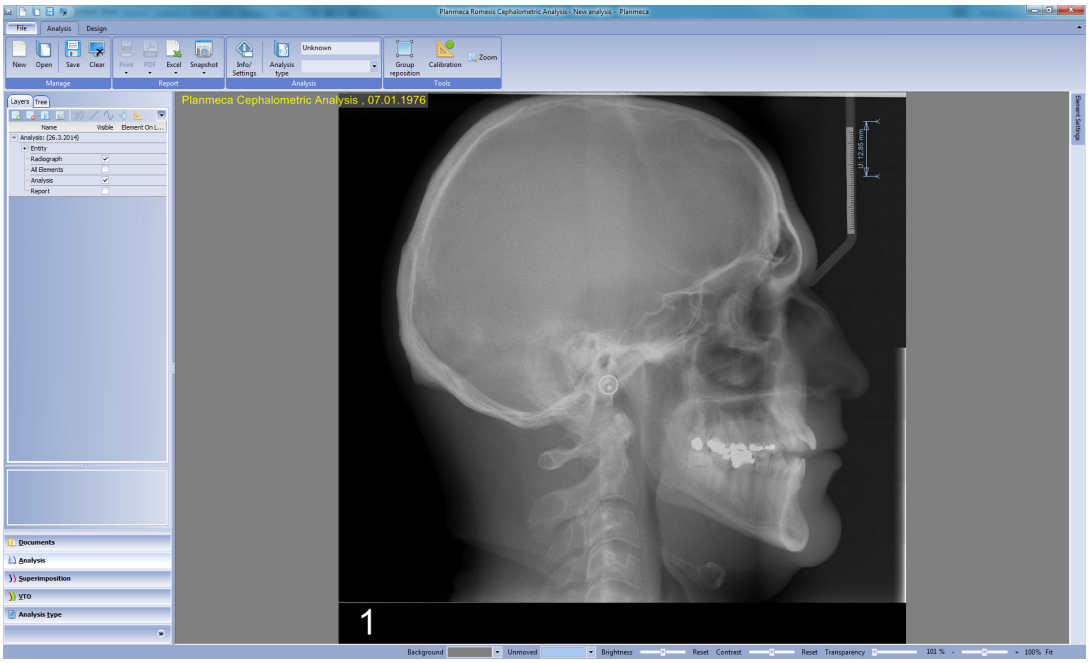
1. Select a radiograph.



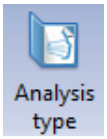
2. Click on the arrow on the **New Analysis** button or right-click on the radiograph and select **New Analysis**.



The image opens in the *Analysis* tab window and is now ready for analysis.

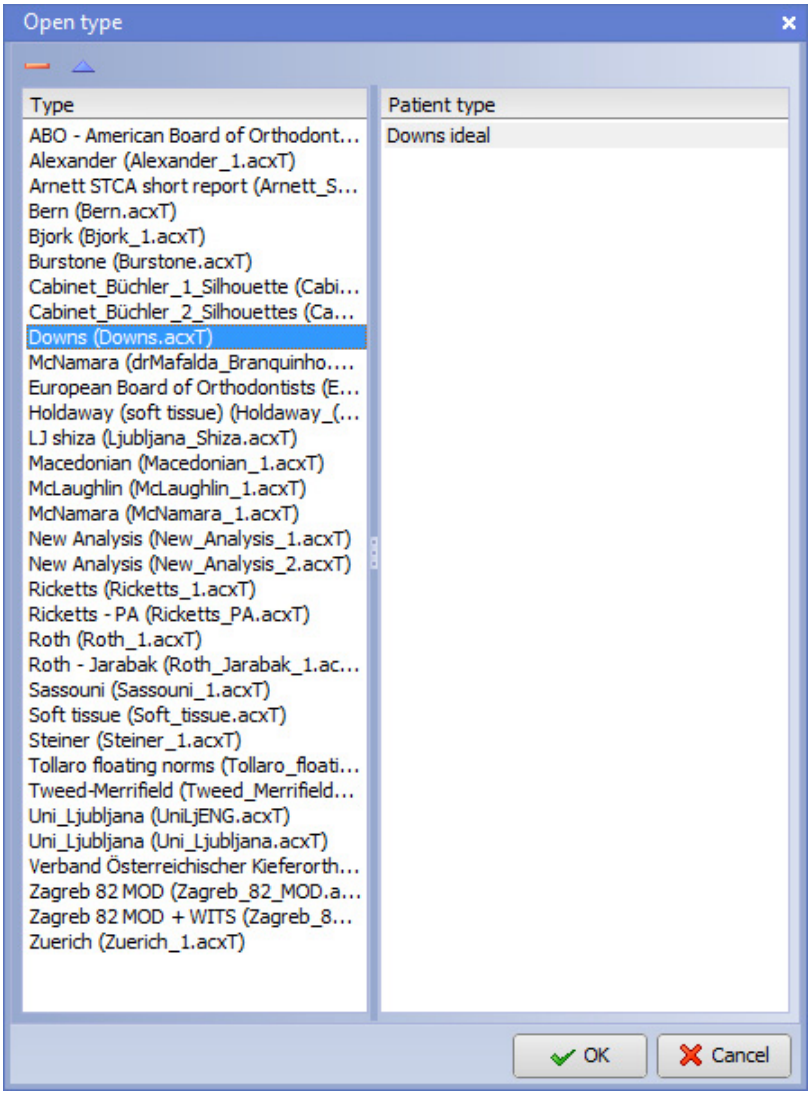


NOTE **The next time this image is opened the ongoing analysis automatically opens with the image.**



3. Click on the **Analysis type** button.

4. In the following window, select the appropriate analysis and patient types and click **OK**.

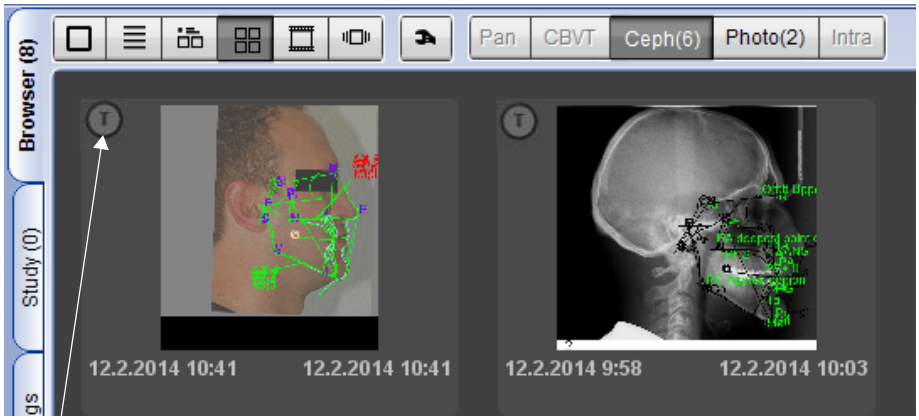


The analysis template appears on the image.

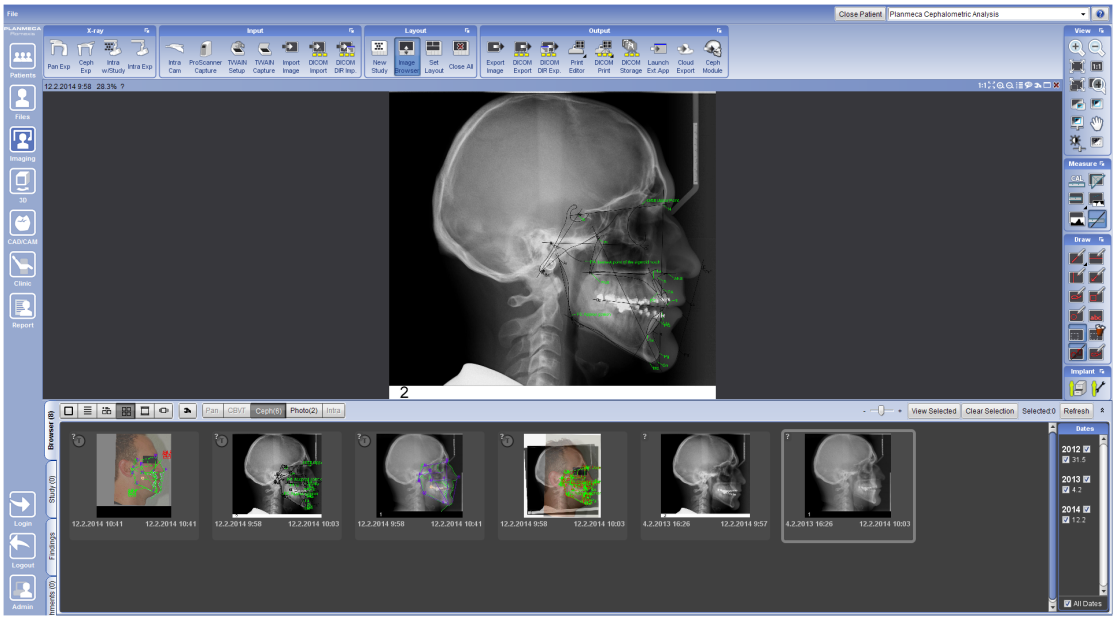
NOTE **Once analysis type is selected and the analysis template is placed onto the radiograph, all landmarks are in Group reposition mode. For additional information see section 5.8 “Group reposition” on page 36.**

2.3 Continuing a previous analysis

1. Open the patient in Planmeca Romexis *Patients* module by double-clicking the patient name.
2. Click the **Imaging** button.
3. Open the image onto the screen by double-clicking on it in the *Browser* tab.



The previously made analysis, superimpositions, VTOs and prediction images are marked with **T**.

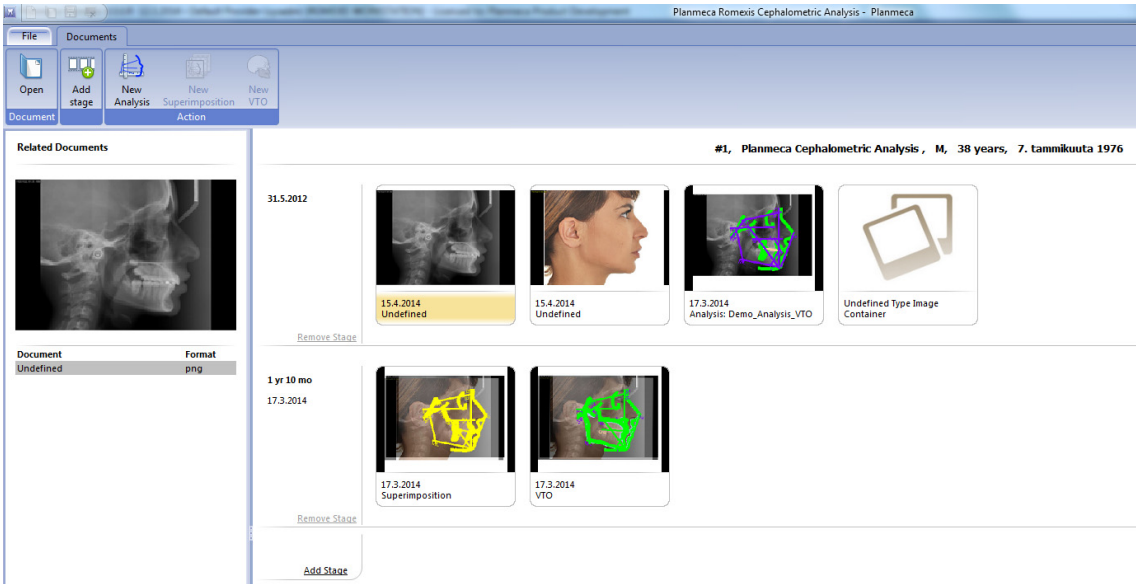


4. Click the **Ceph module** button.
5. The image opens in the *Analysis* tab and is now ready for analysis.

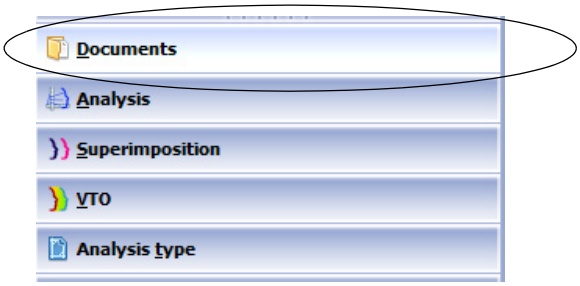
   The elements of the last analysis type will automatically open with the image.

3 DOCUMENTS TAB

The *Documents* tab displays patient data, cephalometric radiographs, analyses, superimpositions, VTOs and reports.



To access the *Documents* tab click the **Documents** button at the bottom of the screen on the left.



3.1 Treatment stages

Patient records are automatically organized in stages based on the record dates.

Records can be dragged and dropped between different stages.

1. To add a new treatment stage:

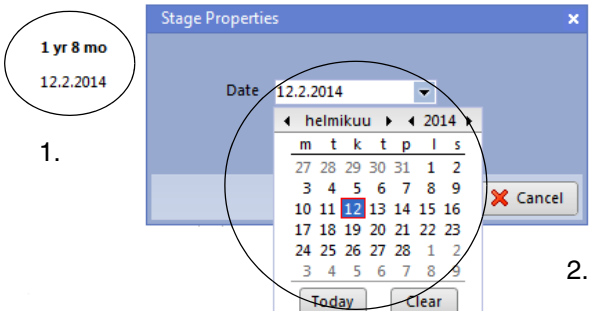
- Click **Add Stage** button on top toolbar.

OR

Add Stage

- Click the *Add Stage* text.

2. Click on the *Date* field and select the desired date from the calendar.



A new stage is created.

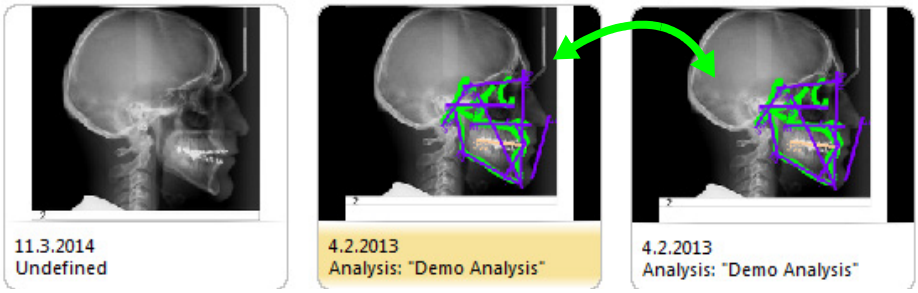
The records can now be dragged to the new stage.

Remove Stage

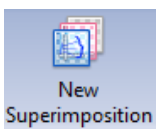
To remove an empty stage click on the **Remove Stage** button at the end of the stages list.

3.2 Superimposition

To create automatic superimposition drag and drop one analysis over the other.



The analyses are superimposed using predefined superimposition links of the used analysis type.



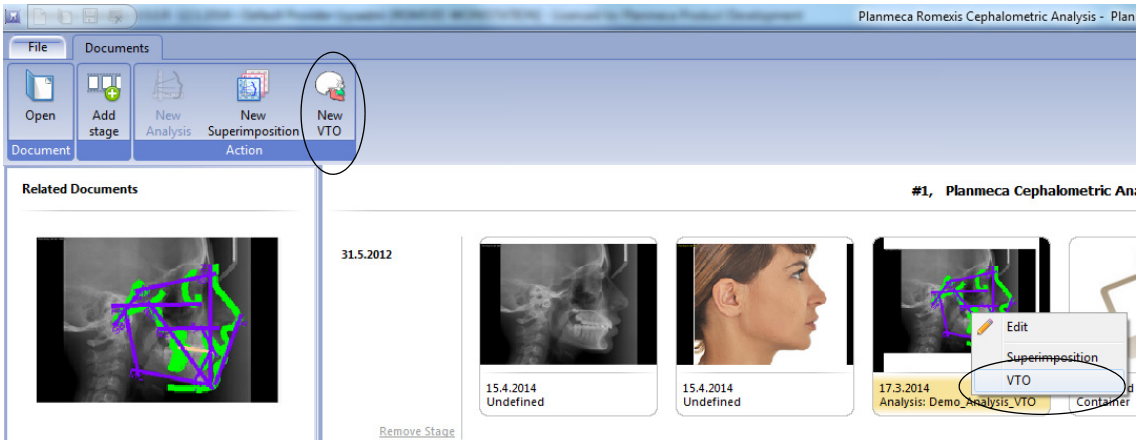
Alternatively select first an analysis and then click on the **New Superimposition** button on the Main Toolbar or right-click on the analysis and select New Superimposition.

For more information on superimpositions see section 6 “ANALYSIS SUPERIMPOSITION” on page 44.

3.3 VTO

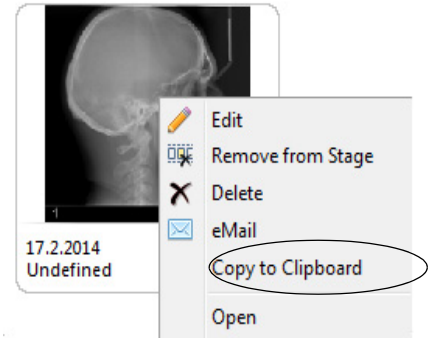
To create a new VTO select the analysis that is used as a basis for it and click **New VTO** button from the Main Toolbar or right-click on the analysis and select **VTO**.

For more information see section 7 “VISUAL TREATMENT OBJECTIVE (VTO)” on page 53.



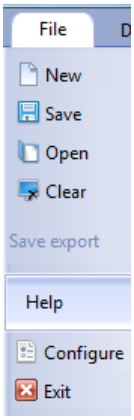
3.4 Copy to clipboard

1. Right-click on the image you would like to copy to clipboard and select **Copy to Clipboard**.



2. Paste the image to the desired location.

3.5 File tab



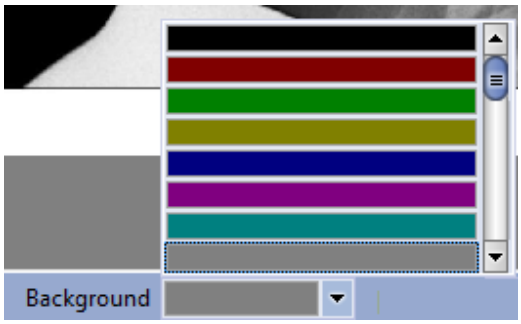
In the *File* tab by clicking the illustrated buttons you can:

- Create a **new** analysis, superimposition, or a VTO depending on which tab is open
- **Save** the current document
- **Open** an existing document
- **Clear** the screen and close the document
- **Configure** current application settings. For more information see section 13 “SETTINGS” on page 95.

4 VIEW SETTINGS

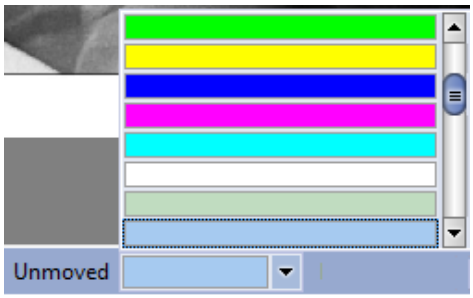
4.1 Background

Select the colour for background by moving the slider up and down and clicking on the desired colour.



4.2 Colour for unmoved elements

Select the colour for unmoved elements by moving the slider up and down and clicking on the desired colour.



4.3 Brightness, contrast and transparency

Brightness, contrast and transparency can be adjusted by moving the corresponding slider to the right (increase) or to the left (decrease).

To reset the previous setting click **Reset**.

4.4 Image size

To adjust the size of the image on the screen click the **-** an **+** buttons or move the slider to the left or right by clicking and dragging it with the left mouse button.

To fit the image to the size of the screen click **Fit**.

The image can also be zoomed by scrolling the mouse wheel.

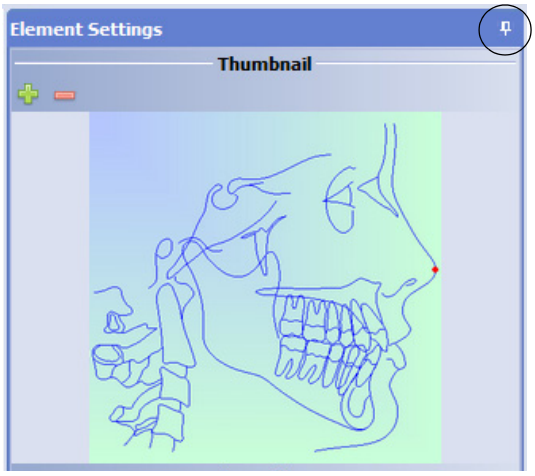
4.5 Adjusting window layout

The windows on the layout can be moved, resized and hidden according to personal preferences.

4.5.1 Hiding Element Settings window

The window can either float on top of the main application window, or they can be hidden on the side.

To hide the window click this button on the top right corner of the window.



The window is now hidden on the side.

To restore the window to its original place click the corresponding tab an re-click this button.

5 USING THE ANALYSIS TOOLS

5.1 Layers

An analysis visualized on the screen is composed of different layers. In the *Layers* window you can select which layers are visible in the image, which elements are visible in each layer or add new layers.

The window for layers and displaying elements is located both in the *Analysis* and *Superimposition* tabs.

The following layers have been predefined:

- **Radiograph**

  Contains the radiograph. When hidden, the radiograph image is not visible (100% transparency).

- **All elements**

  Contains all geometric elements including measurements. When selected, all the elements are shown.

- **Analysis**

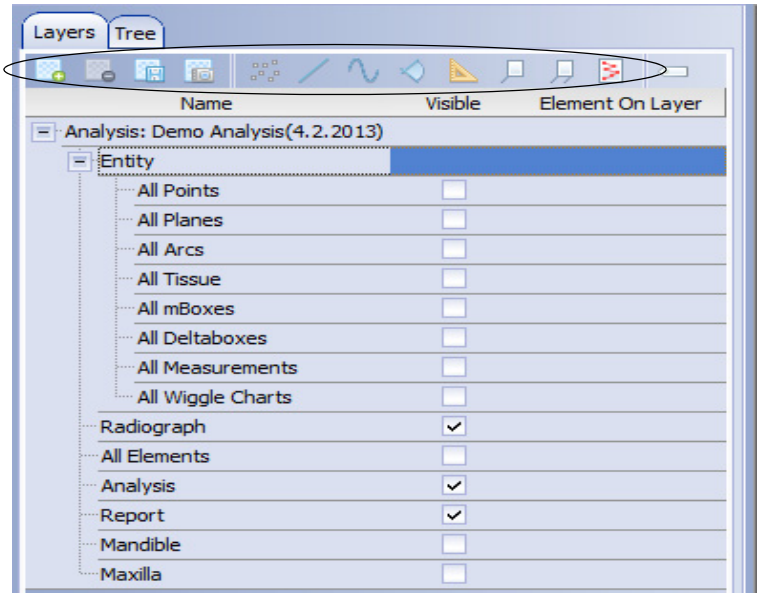
  The analysis layer enables you to visualize together all required elements for the analysis making. When starting an analysis, the layer is visible, but all the other elements are hidden.

  When creating a new analysis type from the beginning or when creating a new element, the element is not automatically added to any layer. it is recommended to add all the elements that need to be visible when making an analysis to the analysis layer. For more information see section 9 “CREATING A CUSTOM ANALYSIS TYPE” on page 77.

- **Report**

  The report layer enables you to combine all elements shown in the printout / report image for printing an analysis. In other words, if you want an element to be shown in the printout, it has to be included in the report layer. It is recommended to add elements to the report layer when creating the analysis type. Outlines are by default included in the report layer.

To show or hide elements and to use group save function, use the top-window buttons.



5.1.1 Showing / hiding layers and elements in groups

To show the layer / elements in specific groups of elements check the *Visible* box next to the selected layer.

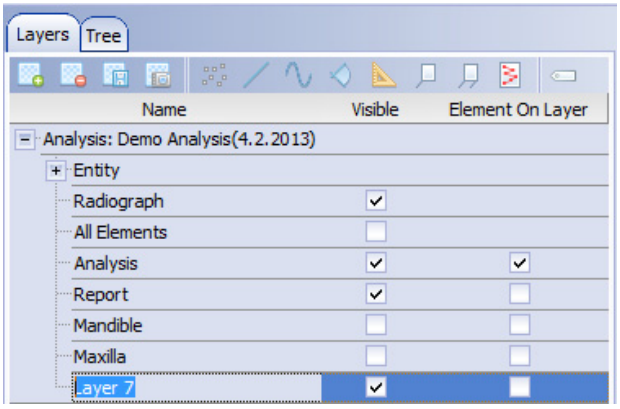
To hide it uncheck the box. Multiple layers can be set visible simultaneously.

5.1.2 Adding layers

1. To add a new layer click this button.

   A new row appears on the list.

2. Enter a name for the new layer.

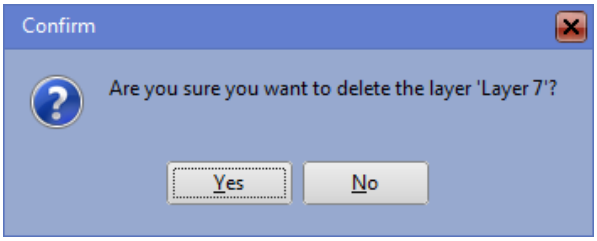


NOTE **In order the new layer to be available next time the same analysis is performed it should be added and stored to the analysis in the *Analysis type* tab.**

5.1.3 Deleting layers

1. Select the layer to delete and click this button.

   The following message appears.

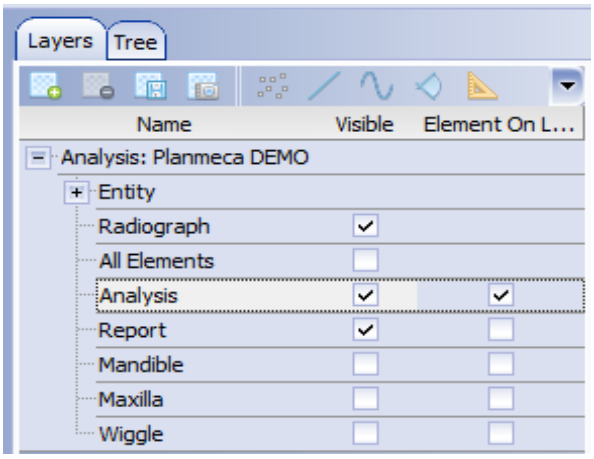


2. Click **Yes** to confirm delete.

5.1.4 Adding/removing elements to/from a layer

The window layout appears different depending on whether any element is selected or not. After selecting an element, the boxes in the *Element on layer* column are checked for layers containing the selected element.

To add an element to a layer first select the element and then check the box in *Element on layer* column of the layer on which you want to place the element.



To add e.g. all points to the analysis layer:

1. Hide all layers except *Radiograph*

2. Click on the **Show/hide points** button.

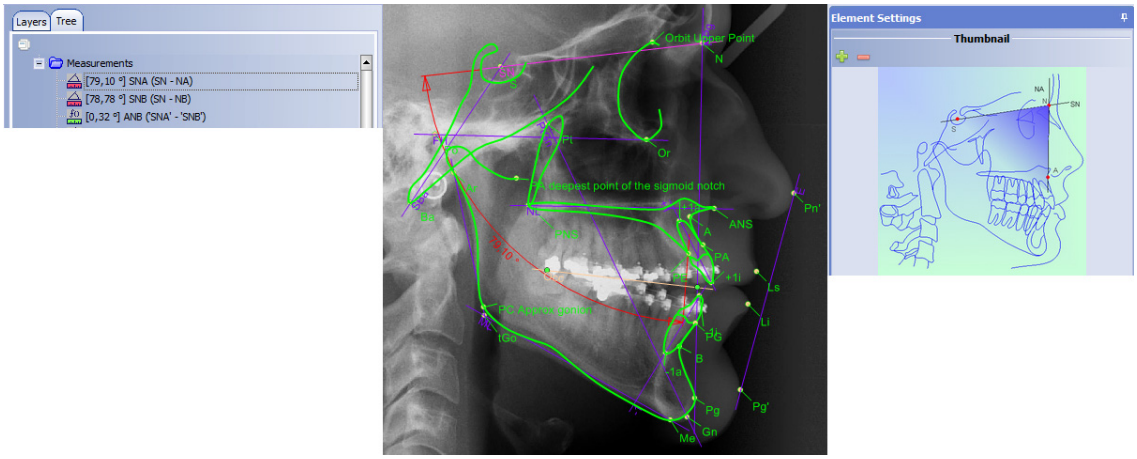
3. Click on the **Save snapshot** on one of the existing layers

4. Select the Analysis layer.

5.2 Selecting elements

To select an element click on it on the image or in the tree.

The selected element is highlighted in the tree and coloured red in the image.



When the selected element depends on other elements all these other elements turn purple.

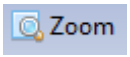
Red colour in the element indicates that the element has not been placed into the layout

Yellow indicates an element in its initial position.

Green indicates an element moved to the designated position.

NOTE **If default colours have been modified these colours may not be valid.**

5.3 Zooming the image



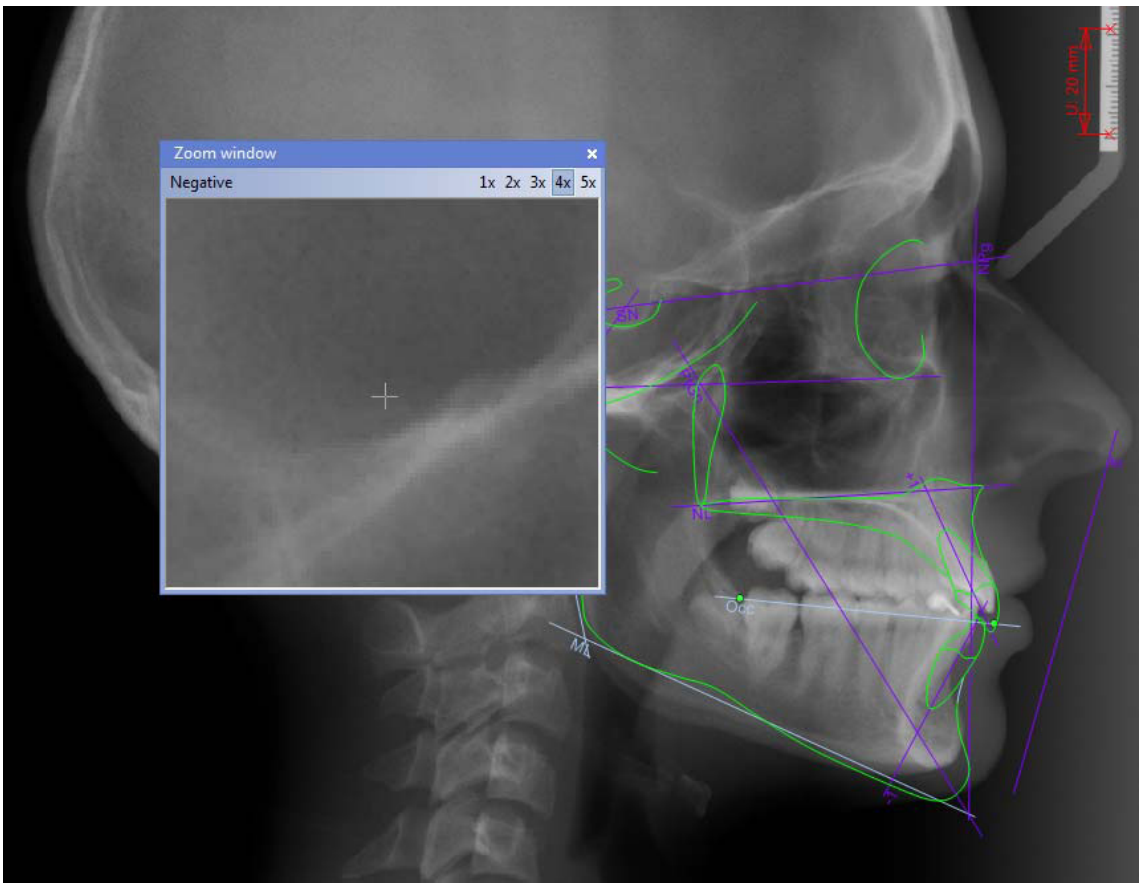
1. Open the *Zoom window* by clicking the **Zoom** button on the main tool bar (alternatively you may press the **F2** key on your keyboard).

   The window can be resized and moved around the image. The window opens in the size and at the location it was used latest.

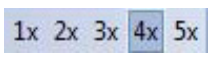
2. Place and move the mouse pointer on top of the area in the image where you would like to zoom in.

   The Zoom window displays a magnified view around the mouse pointer.

NOTE **No elements are displayed in the zoom view. However if a point is selected, the *Zoom window* displays a cross hairs marking at the centre of a point.**



To invert the vicinity of the cross hairs click the **Negative** button.

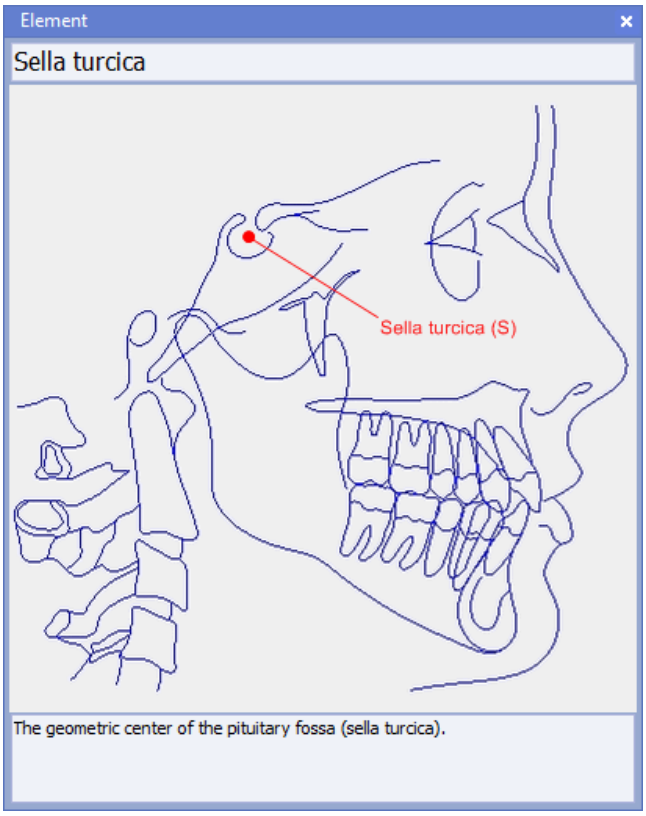
To change magnification ratio use the magnification buttons 

in the upper right corner of the *Zoom window*.

5.4 Element information window

To open the *Element* window press the **F3** key on your keyboard.

The Element window displays information about the currently selected element: name, image and note.



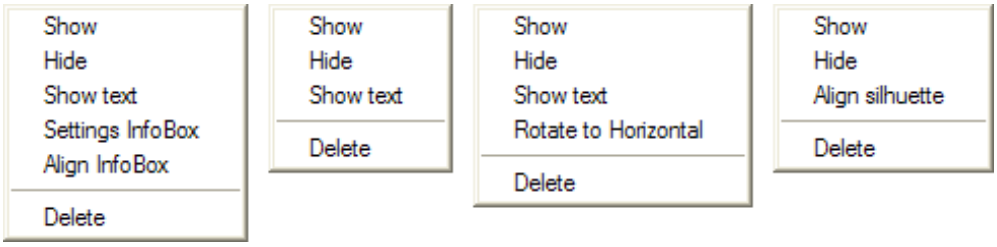
The window can be freely positioned by dragging it on the screen.

The next time the window is opened it opens in the position where left in the latest session.

5.4.1 Element settings

Elements offer a number of advanced options.

To show the options select and right-click the element in the tree or on the image.



An element's context menu (a. InfoBox, b. Point, c. Plane, d. Silhouette)

Show/Hide elements

Elements can be hidden and re-shown as necessary. The element's button in the tree changes accordingly.

Show text

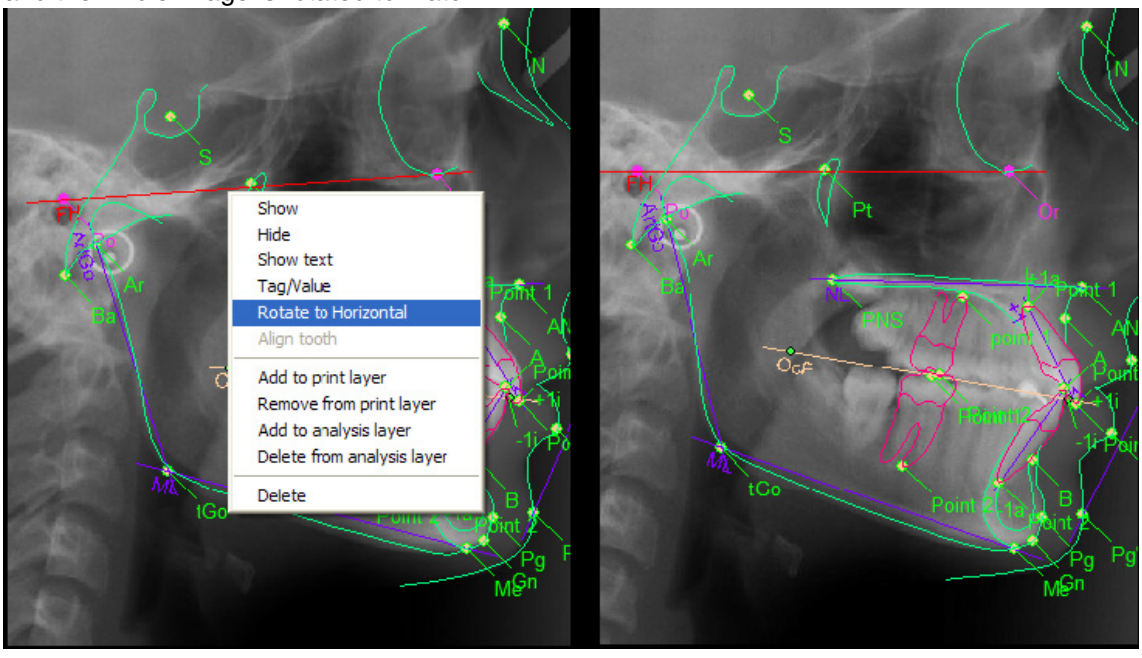
All element labels can be visible or hidden in the analysis. Use this command to toggle a label's visibility.

Rotate to horizontal

The image can be rotated to horizontal according to a plane.

Select and right click the plane.

Then select Rotate to Horizontal from the context menu. This turns the selected plane horizontal and the whole image is rotated to match.



5.5 Analysis elements

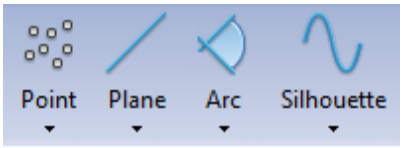
The analysis elements consist of points, planes, arcs and silhouettes. They appear as independent elements or are dependent on other elements (e.g. a point on a plane).

Some tools are divided in two parts, a button and a drop-down menu.

NOTE **The tools can be found on *Design* tab.**

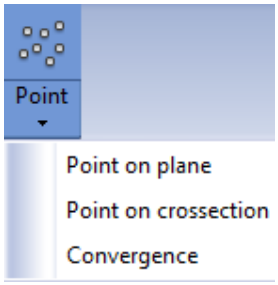
To add individual points, planes, arcs and silhouettes to the analysis click the corresponding button.

To select a different type of point, plane, arc or silhouette click the arrow under the button and select the appropriate type.



NOTE **To repeat element creation you can use the F4 on your keyboard instead clicking the element button or menu.**

5.5.1 Point

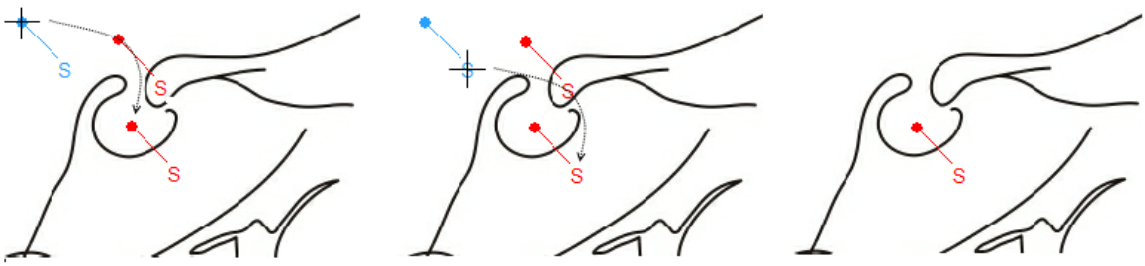


To add a point, click the **Point** button and set it anywhere you want in the image. The point can be moved anywhere in the image.

Single points are not dependent on any other geometric elements and can be moved freely in the analysis.

To move a single point left-click the point and drag it to the desired position. When a predefined element has been moved to a new position it turns red.

Alternatively the point can be moved by clicking the point's label and dragging the point to the desired position.



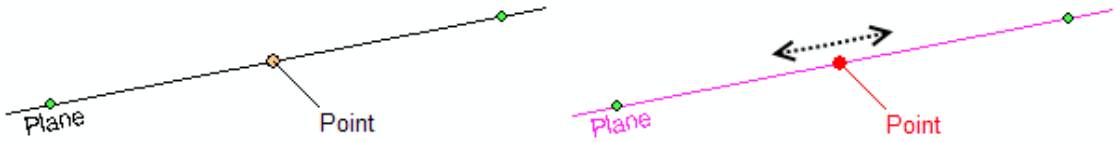
Point on a plane

To move a point on a plane select **Point on plane** and place the point on the desired plane. A point that is on a plane is distinguished from single type points by its colour.

A point on a plane is by default cream-coloured with olive green label and outline. To differentiate between elements it is recommended to set different colours for same type of elements but with different characteristics.

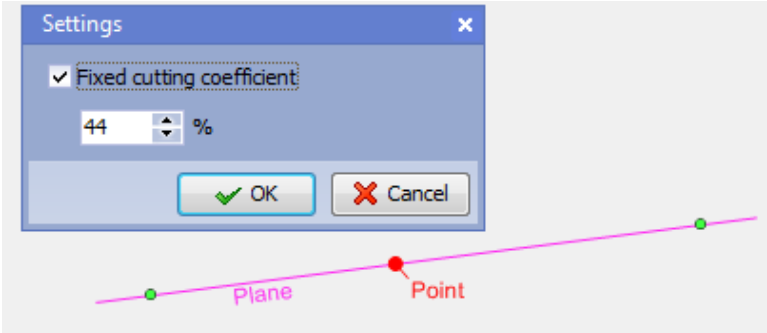
NOTE **If default colours have been modified these colours are not valid.**

If the point is added on the plane (the plane is added first) deleting the plane also deletes the point. Similarly moving the plane also moves the point.



To position the point between end points of the plane and the plane by percentage value double-click the point on a plane which you want to position.

The following window opens.



To set the value check the *Fixed cutting coefficient* box.

Fixed cutting coefficient can have a value between 0-200. The value represents the distance of the added point from the starting point of the plane. Value 100% is equal to the distance between the start and end point of the plane.

Set the percentage by typing the suitable number in the percentage (**%)** field or click the arrows to select appropriate percentage.

Point on cross-section /convergence

To place the point on the cross section of two planes select **Point on cross-section**.

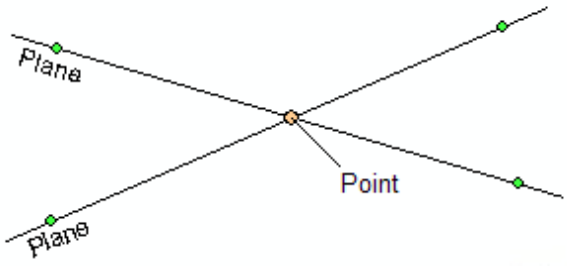
To add convergence points and select two or more planes click on **Convergence button** in the analysis press and hold down the **Ctrl** key while selecting a plane.

The default colour changes according to the type of point whether on the plane or cross-section.

By default, a point at the intersection of planes is cream-coloured; its label and outline are dark grey. If the intersecting planes are deleted, the point that is in the intersection is also deleted.

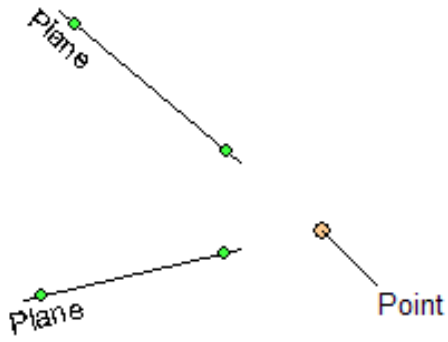
NOTE **If default colours have been modified these colours are not valid.**

Similarly moving any of the planes also moves the point to the new intersection.



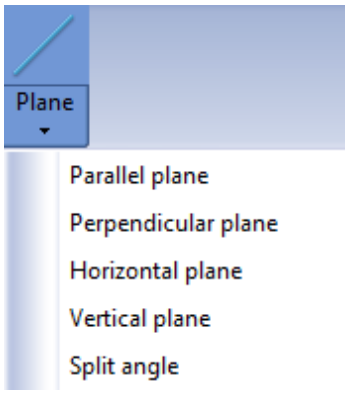
Point on cross-section

NOTE **Planes are infinite in length in both directions. However they are displayed as plane segments with small extensions at both endpoints. The intersection of two planes can therefore be outside the displayed plane segments.**



Convergence point

5.5.2 Plane



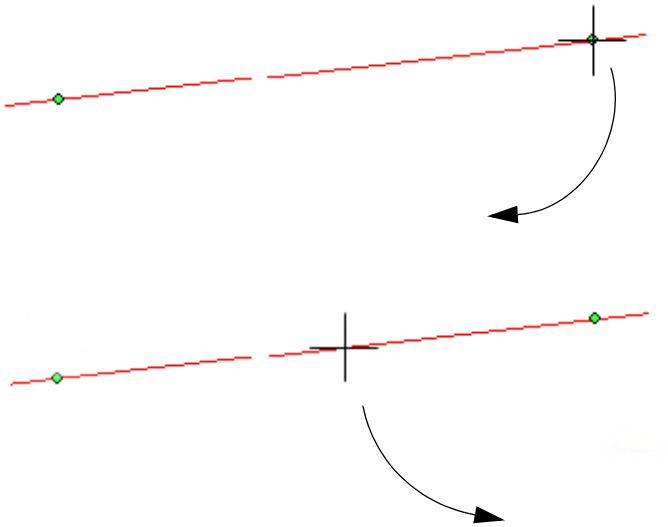
Independent plane

Use one of the following plane types:

1. Independent (simply click any two points),
2. Dependent on a point: click an existing point and then anywhere in the image,
3. Dependent on two points click two existing points in the image.

An independent plane can be moved in two ways.

- By moving one of the two green endpoints. The other endpoint remains in place, the plane is resized and rotated to follow the moving endpoint.
- Selecting a plane anywhere in between the endpoints moves the whole plane without resizing it.



Parallel plane

***Through a point*:**

1. Select an existing plane to which you want to create a parallel plane.
2. Select a point through which the parallel plane should go.

OR

***Custom plane*:**

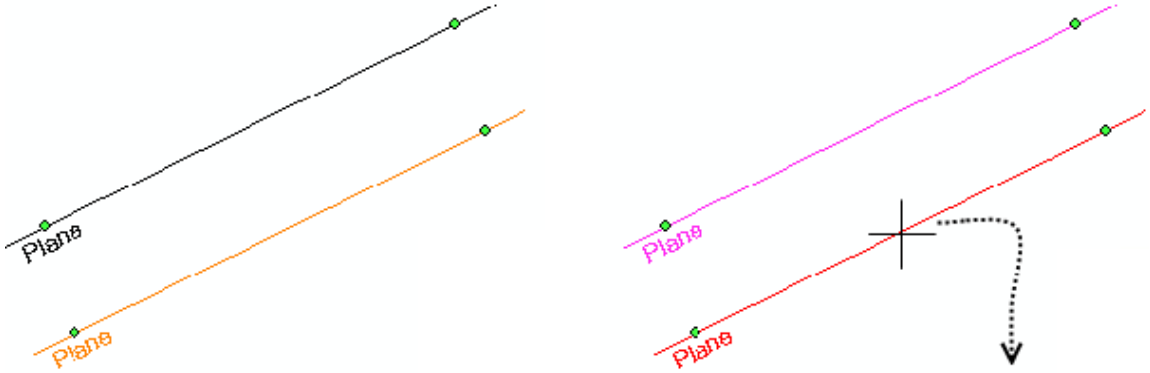
Select an existing plane to which you want to create a parallel plane and click anywhere in the image to add the parallel plane.

Moving parallel planes

A parallel plane is coloured brown. The parallel of a selected plane turns purple. Move it by clicking anywhere between the endpoints and drag it around.

NOTE **If default colours have been modified these colours are not valid.**

In case the position of a parallel plane is defined with a point, moving the parallel plane also moves the point.



Perpendicular plane

Through a given point:

1. Select a plane to which you want to create a perpendicular plane.
2. Select a point through which the perpendicular plane should go.

OR

Custom plane

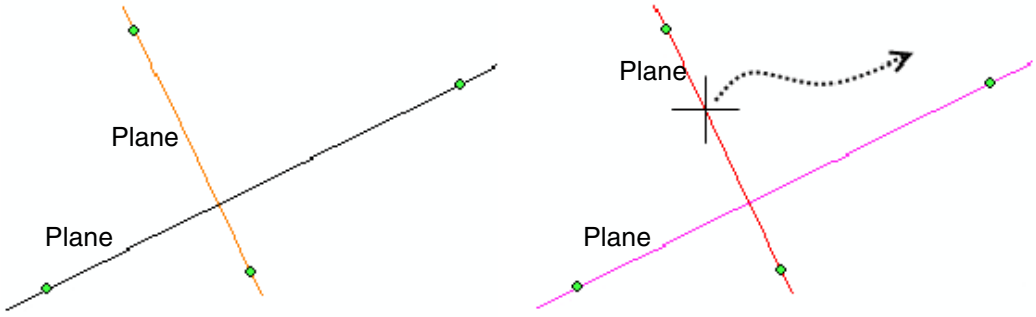
First select an existing plane, and then click anywhere in the image to add the perpendicular.

Moving perpendicular planes

A perpendicular plane is coloured brown.

The perpendicular of a selected plane turns purple.

Move the plane by clicking and dragging anywhere between the endpoints. In case the position of a perpendicular plane is limited with a point, you can move the perpendicular by moving the point.

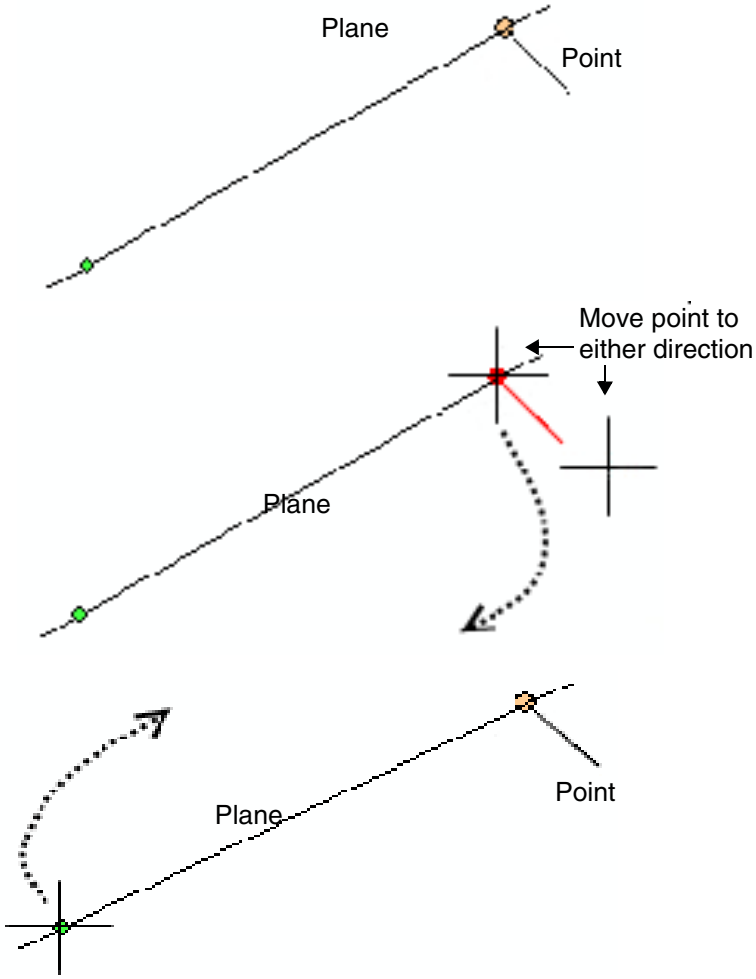


Moving a plane crossing one point

If the plane is dependent of the point, it can be moved in two ways.

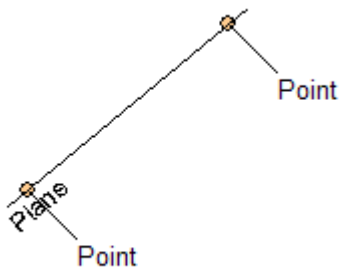
- By moving the green endpoint. The point remains in place; the plane is resized and rotated to follow the moving endpoint.
- By moving the independent point. Select and move the point as described above. The green endpoint remains in place; the plane is resized and rotated to follow the moving point.

Such planes cannot be selected as a whole and moved around.



Moving a plane crossing two points

A plane that is dependent on two points can only be moved by moving one of the two points. Such planes are coloured blue by default.



Vertical and horizontal planes

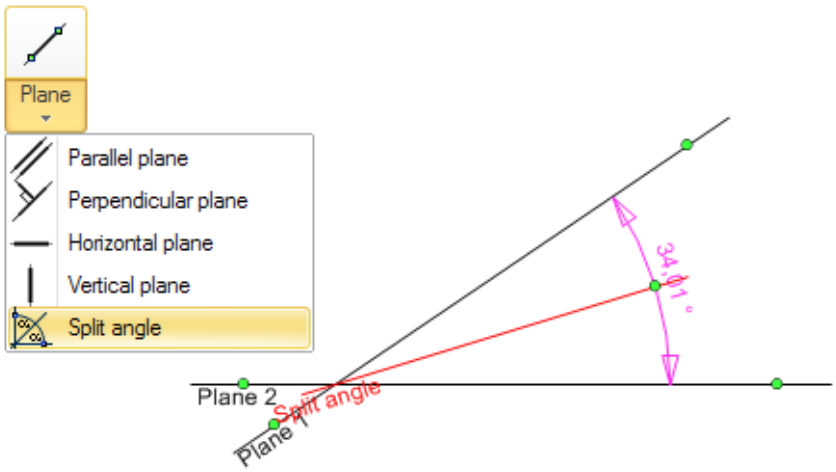
Vertical and horizontal planes are always vertical or horizontal no matter how the image is rotated. Vertical and horizontal planes can be moved by clicking anywhere between the endpoints and by dragging the plane to the desired position.

5.5.3 Split angle

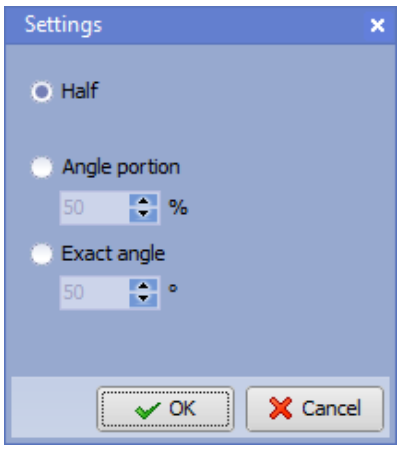
1. To draw a plane which runs under a certain angle together with the plane or intersects the angle in a set percentage ratio, select the *Split angle* option from the drop-down menu.

2. To create the plane splitting an angle, select the angle.

   The image shows a plane which intersects the angle. Two planes and an angle are required.



Double-clicking the dividing plane opens the *Settings* window where you can define the plane properties. You can set a half-angle, angle portion in percentage value or exact angle value (e.g. when defining a horizontal plane in the Burstone analysis).

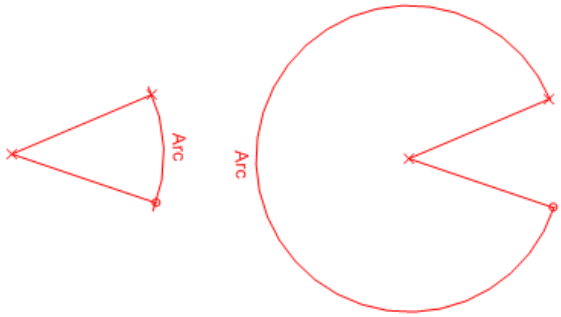


5.5.4 Arc

An arc can be drawn in three different ways

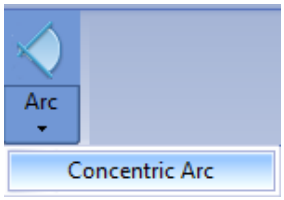
1. Independent on other structures: simply click anywhere in the image,
2. Based on a single point: click an existing point and then anywhere in the image.
3. Based on two points: click two existing points in the analysis.

To switch between inner and outer arc press and hold down the **Ctrl** key and select inner or outer line with left mouse button. See the example below.

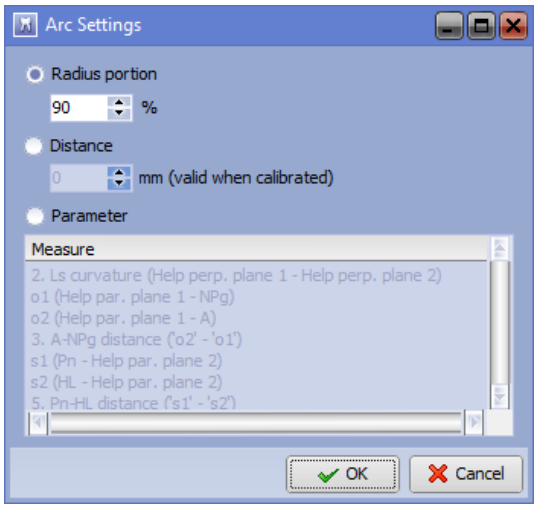


Concentric arc

To draw a concentric arc select **Concentric arc** tool and click on an existing arc.



Double-clicking on a concentric arc opens the *Arc settings* window which controls the arc radius.



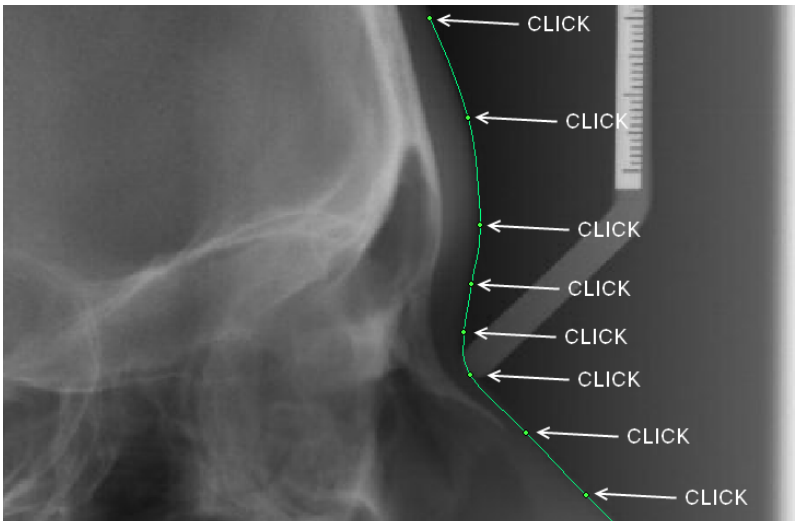
Concentric Arc radius can be set as Radius portion (radius portion of independent arc), as distance from independent arc or as parameter.

NOTE **Parameter in Concentric Arc settings is set in parameter settings. For additional information on parameter settings see section “Parameter” on page 41.**

5.5.5 Silhouette

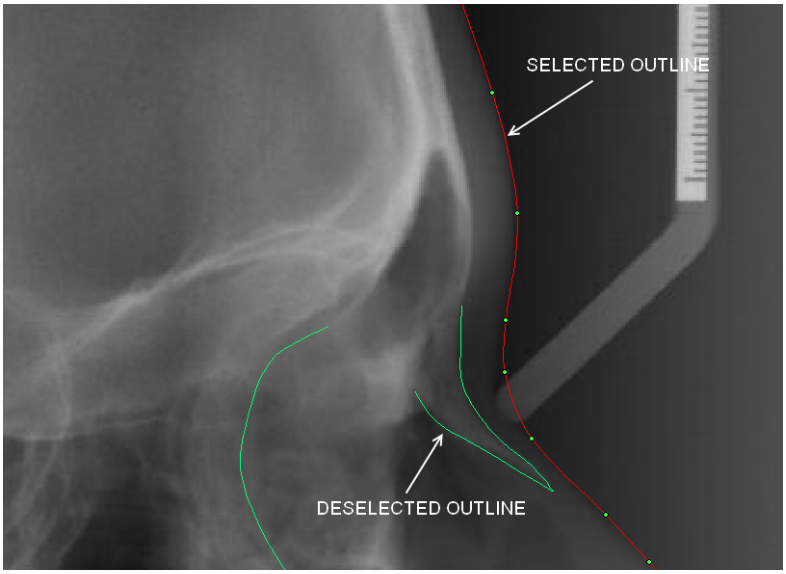
1. Click the **Silhouette** button in the main tool bar.
2. Start creating the outline by clicking on the image.

   Additional clicks create new nodes to the outline.
3. To finish the silhouette double-click in the image where you want the silhouette to end.



To reshape the outline you can move the nodes by dragging.

To add/remove nodes from the outline double-click on them.



NOTE **Deleting any of the two end nodes will delete the whole outline.**

All outlines are by default on the print layer and therefore appear on the printout.

NOTE **Silhouette outlines cannot be connected to other elements.**

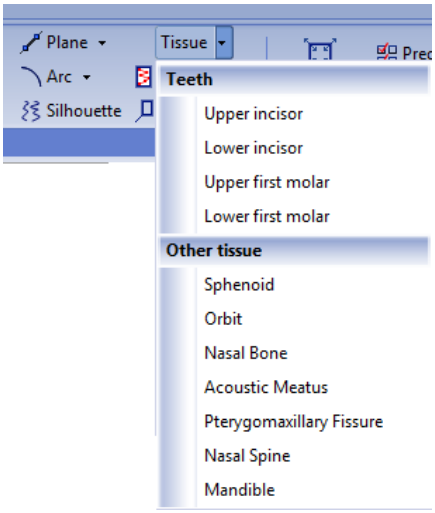
To move the outline click and drag anywhere between the endpoints and nodes.

To change the label, name, description, colour or layer of the outline, see section 5.4.1 “Element settings” on page 19.

5.5.6 Predefined silhouettes

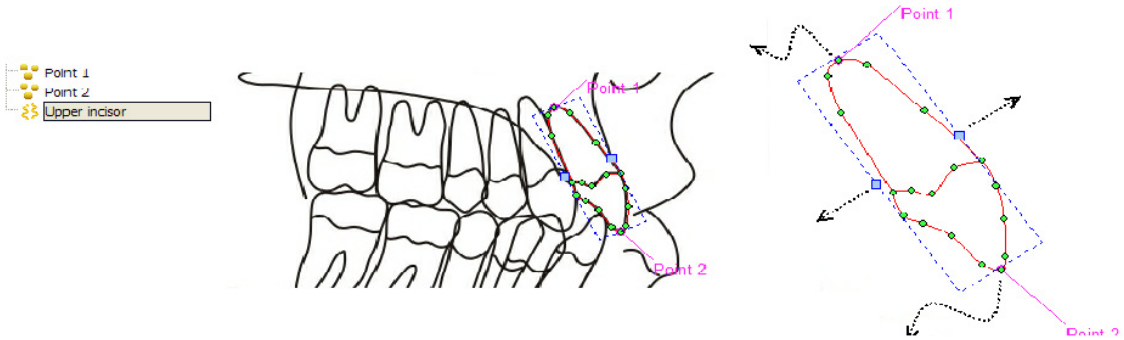
Planmeca Romexis Cephalometric Analysis module comes with predefined silhouettes.

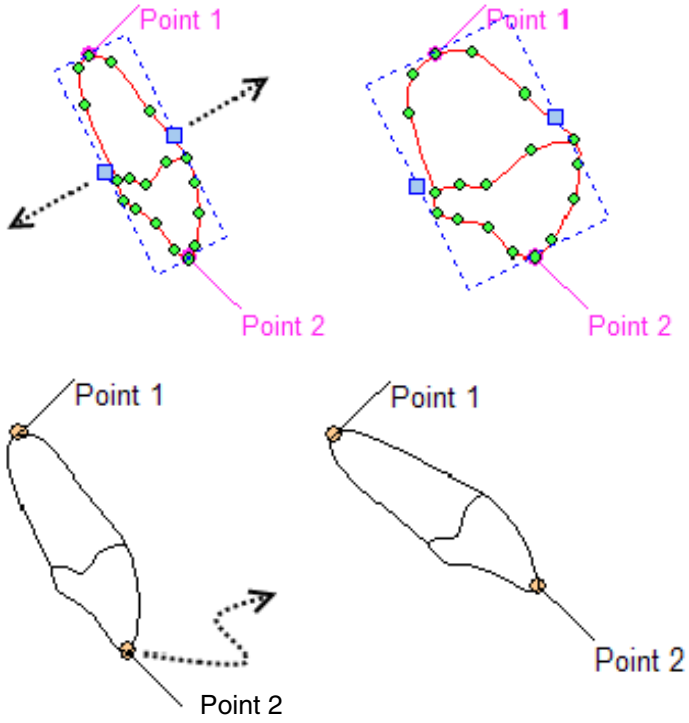
There are four predefined teeth outlines and seven hard structure outlines available.



An outline consists of points and the outline. The outline is dependent on the points and thus deleting a point also deletes the outline.

The outlines have predefined default positions in the analysis. A newly added or selected outline is marked with a blue dashed bounding box around it. The position of an outline can be adjusted by dragging its points to the desired position. To change the width of the outline move the blue squares.





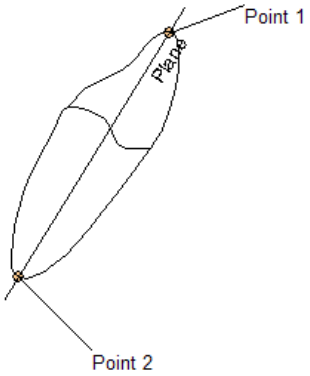
To align on outline with other elements in the analysis:

Right-click on the outline point and select **Align.**

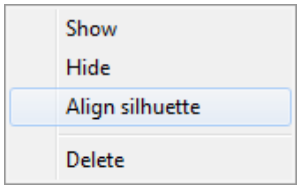
Click on the point with which the outline point is to be aligned.

Also other elements can be aligned with the points of the outline.

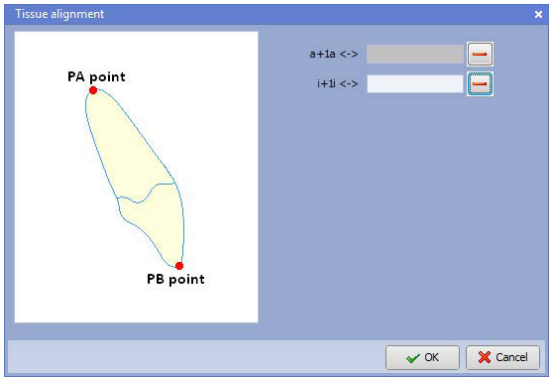
E.g. A plane is connected to the apical point and incision inferius.



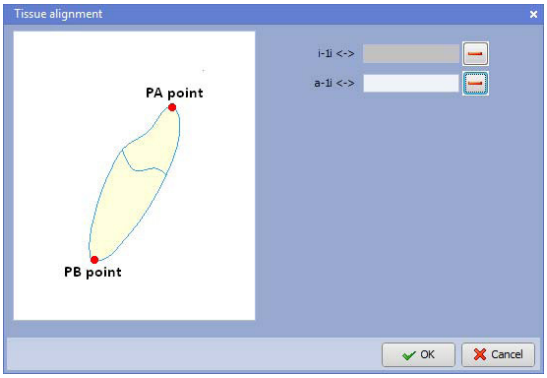
Right-clicking an outline opens a menu where you can select the **Align silhouette** option.



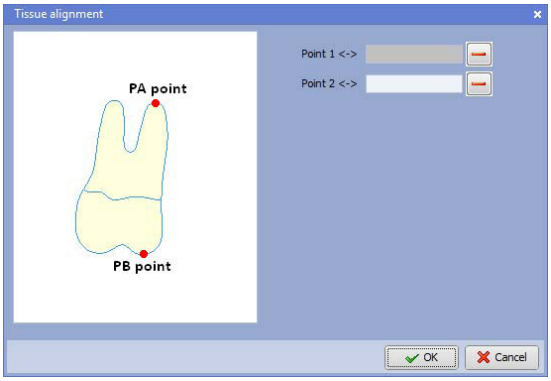
The corresponding alignment tool is opened depending on the type of the selected silhouette. See follow-up for interfaces on silhouette alignment.



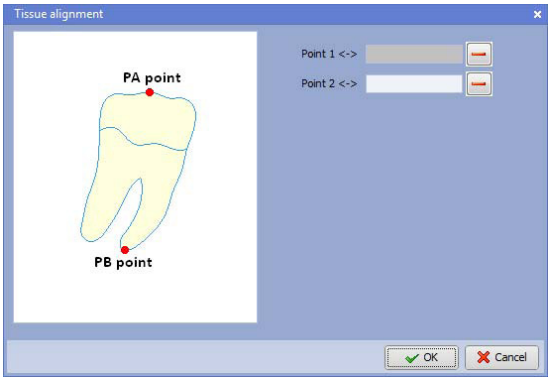
Upper incisor



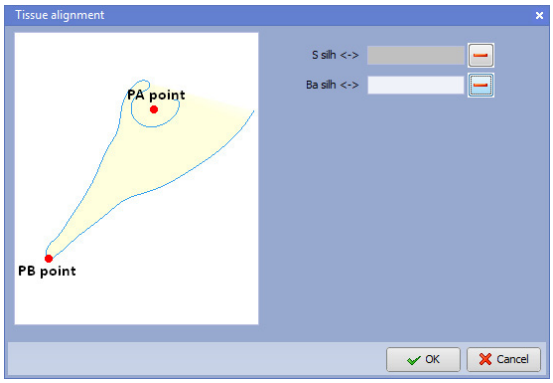
Lower incisor



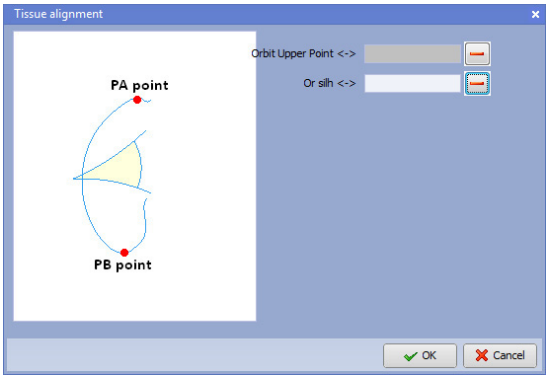
Upper first molar



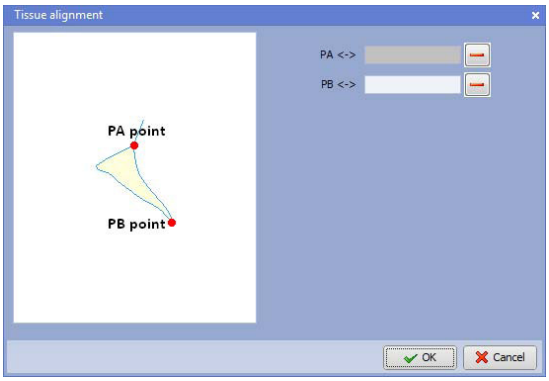
Lower first molar



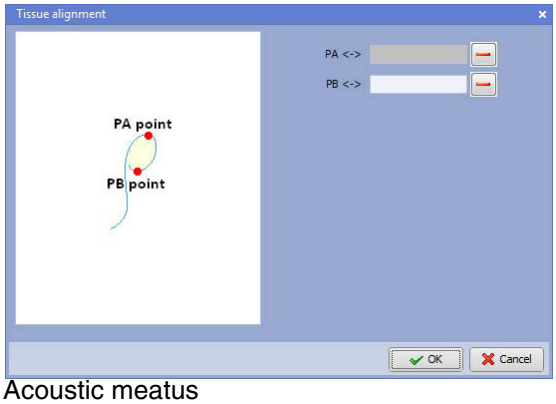
Sphenoid



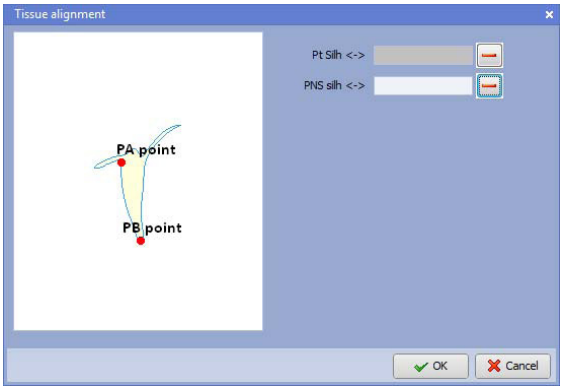
Orbit



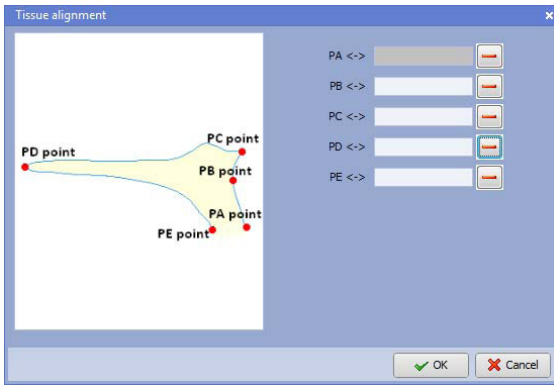
Nasal bone



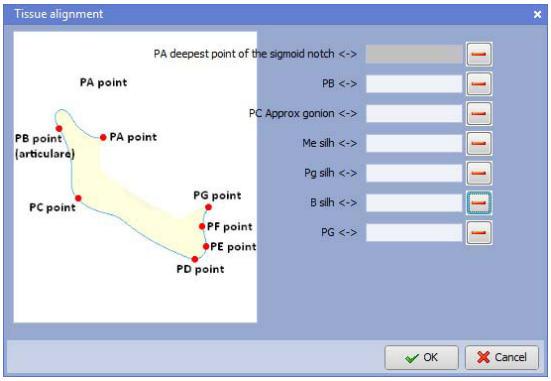
Acoustic meatus



Pterygomaxillary fissure



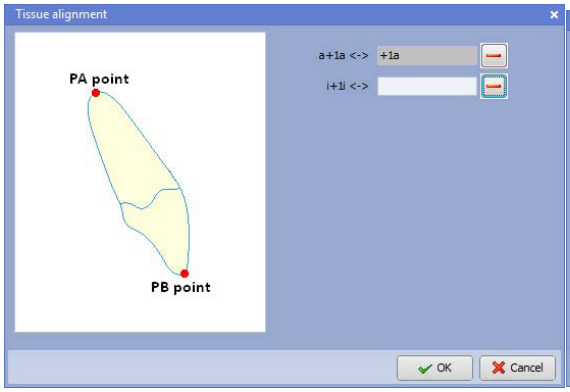
Nasal spine



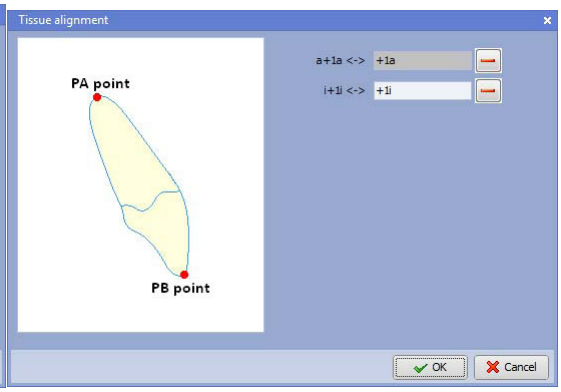
Mandible

After the point is selected for silhouette alignment it is displayed on the list. All points must be entered. To remove any point from the alignment list click the adjacent dash sign -.

Silhouette alignment selected points, a. one point, b. two points

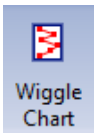


One point



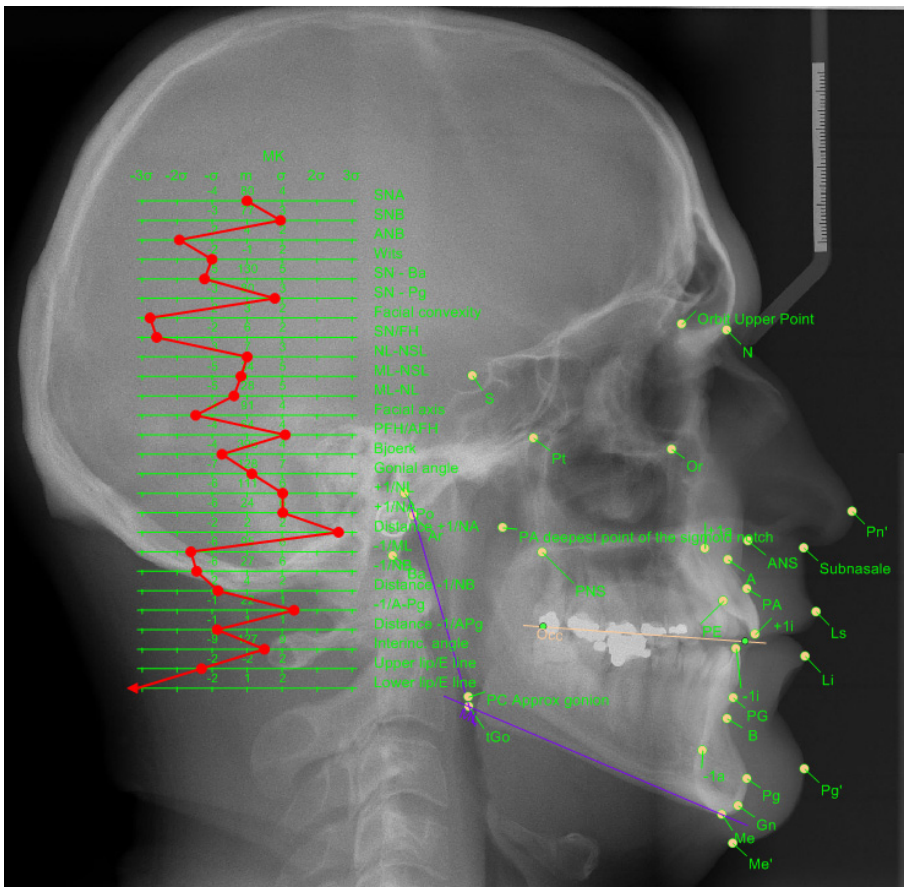
Two points

5.6 Wiggle chart



The wiggle chart contains analysis report measurements and displays the relations between the current measurement values and the reference values expressed in deviation from of each reference value.

To open a wiggle chart click this button. The wiggle chart opens on top of the current image.

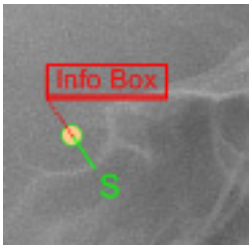


NOTE **The wiggle chart should always be placed on the report layer.**

5.7 InfoBox settings

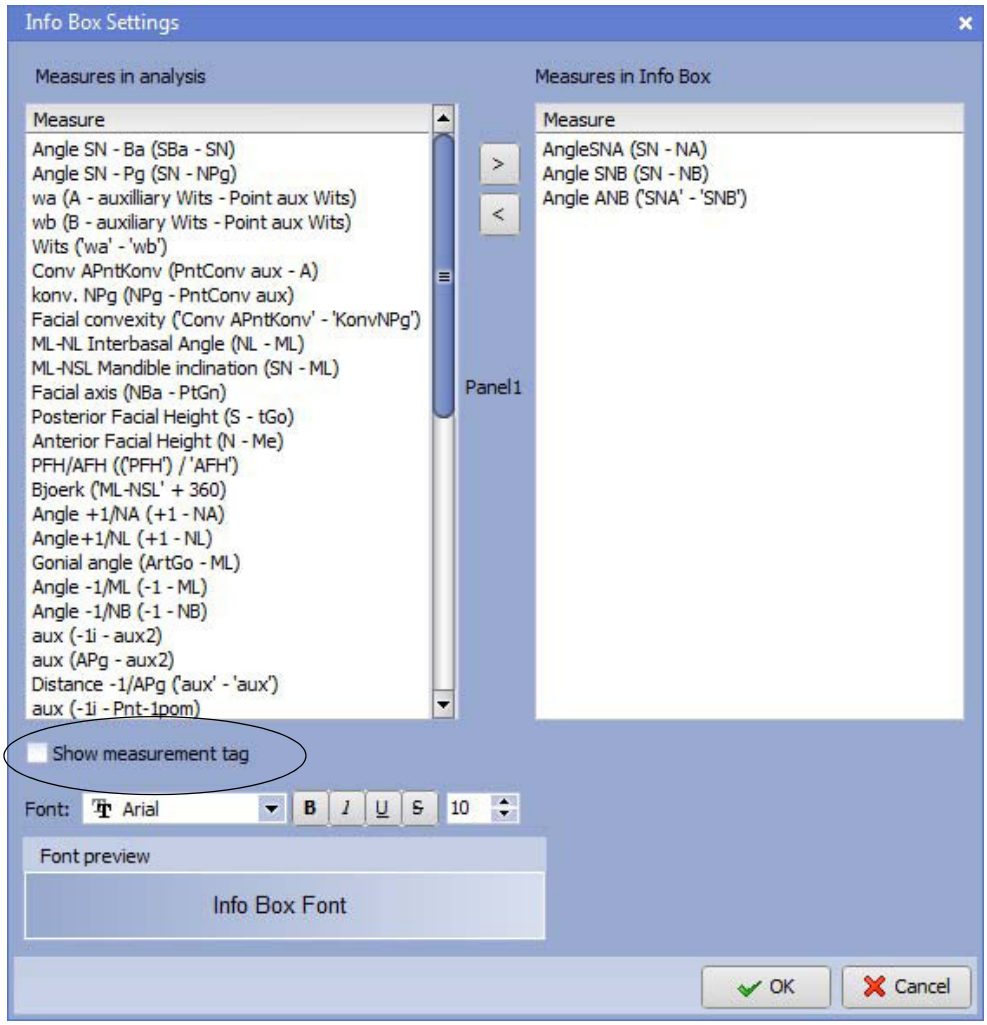
The measurement values can be shown while making the analysis by placing an InfoBox with the respected measurements on the image.

1. Select **InfoBox** in the main tool bar and click anywhere in the image
2. The box now shows in the analysis. To modify the element settings double-click the box.



The following window appears. You can select measures showing in InfoBox and modify font settings.

By checking/unchecking the *Show measurement tag* box you can select whether the name of the selected measurement will be visible in the analysis.

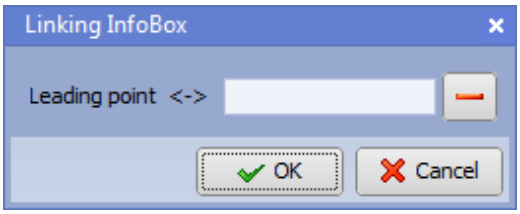


Aligning InfoBox

After selecting the element **InfoBox**, you can select **Align InfoBox** option from the context menu.

Select the point to which you want to align the InfoBox.

The information on the selected point is automatically displayed in InfoBox.



To move the InfoBox on the screen press the **Ctrl** key on your keboard and move the InfoBox while holding down the left mouse button to a new relative position in relation to the point of reference.

If you delete the point to which the InfoBox is linked the InfoBox becomes a floating element and cannot be deleted.

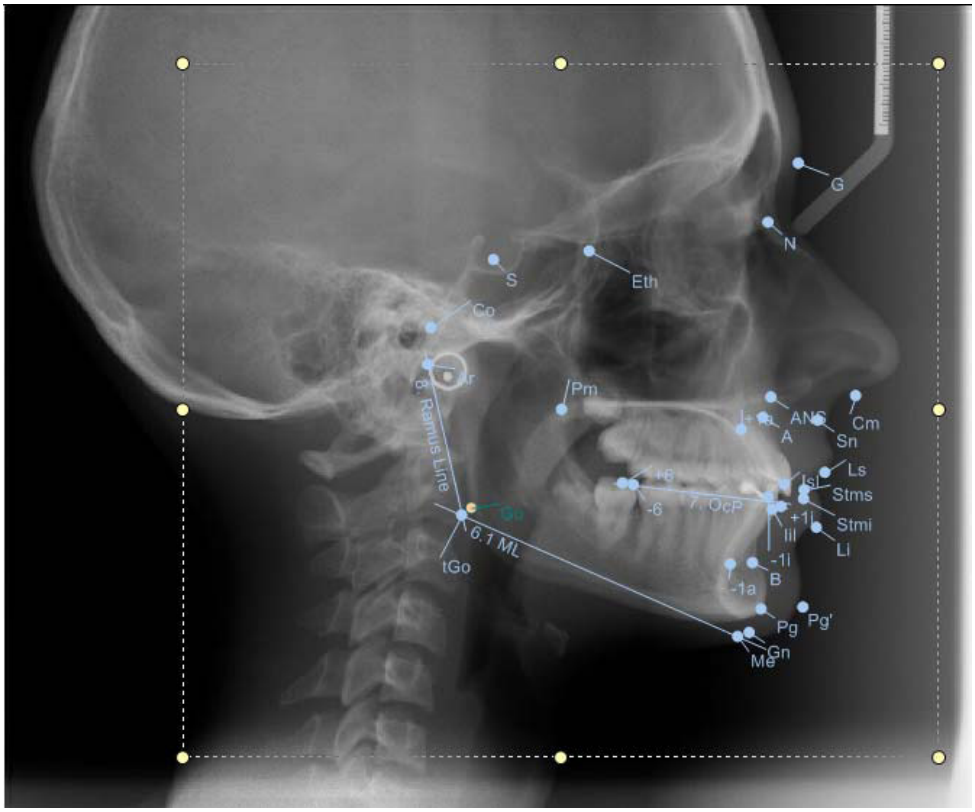
5.8 Group reposition

Group reposition tool is used to move all landmarks simultaneously as group for approximate positioning.

1. Click the **Group reposition** button from the main tool bar.

NOTE **When making a new analysis the group reposition tool is active by default.**

The repositioning grid appears.



2. To resize the group reposition layout click and drag the points at the corners and on the sides of the dashed frame.

3. Click somewhere in the group reposition area to move the elements as a group.

4. When satisfied with the approximate positioning, turn off the group reposition tool by clicking outside the group positioning area or re-click the **Group reposition button** in the main tool bar.

5. To fine-tune the landmark locations click and drag the landmark using the left mouse button.

6. When the landmarks are accurately positioned continue to section 8 “CREATING REPORTS”.

5.8.1 Defining superimposition links

Superimposition links are used to predefine link(s) which will be used in superimposition. Link(s) defined in analysis type will be applied in all analyses using selected analysis type. You can also define superimposition link(s) at analysis level. In that case the links are not available next time when making a new analysis.

To create superimposition link click the **Link** button.

In the following window you can add, remove and edit links.

To add a link select

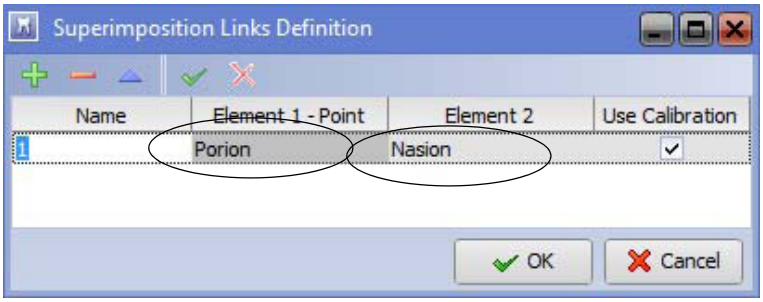
- two points on analysis type (or analysis)

  OR

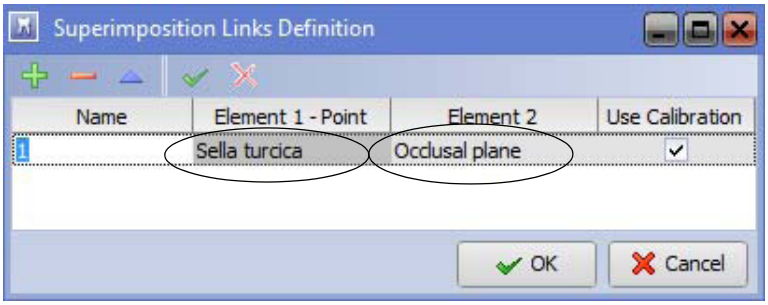
- one point and one plane

The selected points and the names of the planes will be displayed under *Element 1 - Point* and *Element 2* column in the *Superimposition Links Definition* window.

Two examples are shown below.



Point-point

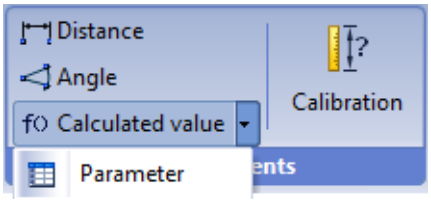


Point-plane

5.9 Measurements

The measurements can be used to measure distances and angles between geometric elements included in the analysis and to create calculations based on the measurements.

The name, label, description and image of the measurement can be edited. Also visibility and colours can be modified. The measurement can also be hidden or it can be used only in calculation or printout.



Both distance or angle measurements can have two statuses. Each measurement is undefined when newly added.

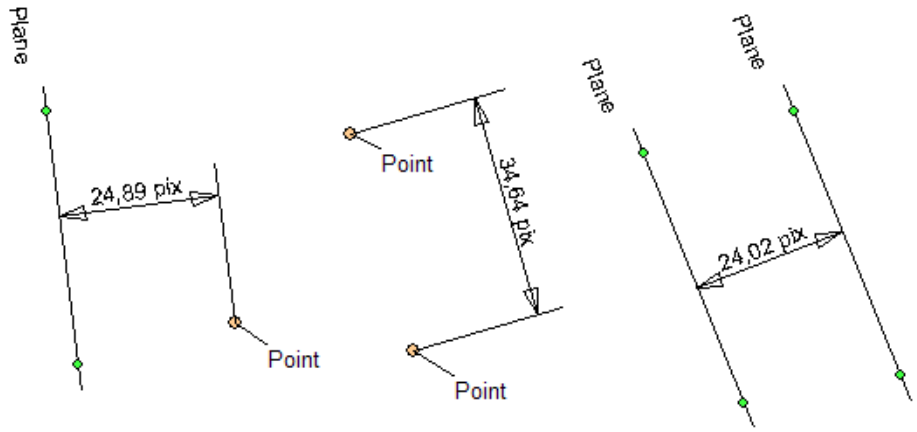
The measurement was inserted in the structure and has undefined status (coloured in red).

The measurement was inserted in the structure and has defined status (coloured in green).

5.9.1 Distance

Distance measurement can be determined as between two points, between a point and plane and between two parallel planes.

1. Distance between two points: Click **Distance** and measure the distance between two points.
2. Distance between a point and a plane: Click **Distance** and measure the distance between a plane and a point. The order of selection does not matter. You have obtained a perpendicular distance (that is, the shortest distance between the point and plane).
3. Distance between two parallel planes: Click **Distance** and measure the distance between the two planes.

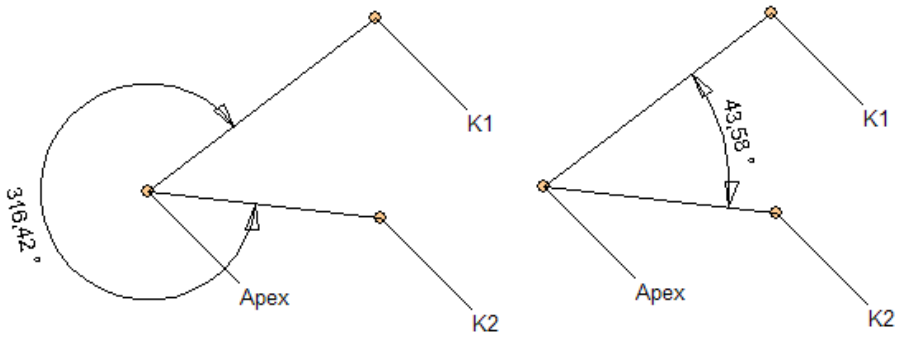


5.9.2 Angle

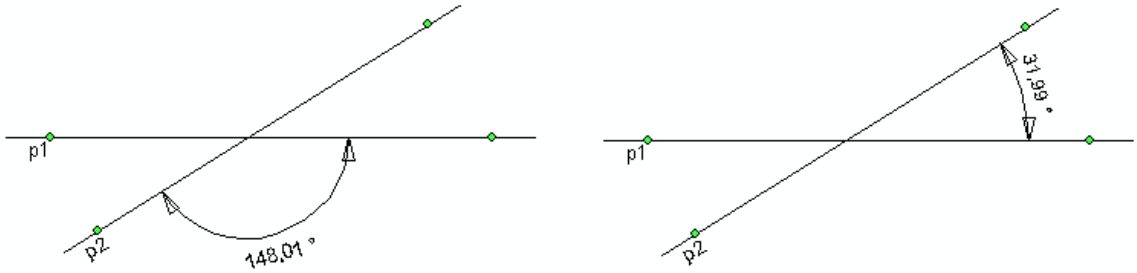
Angle measurement can be determined between three points or between two planes.

1. Angles are determined by three points. The first point determines the first ray, the second point determines the apex and the third determines the second ray.

   The order of setting the points must be observed. On the left-hand side select K1, Apex, K2; and on the right-hand side select K2, Apex, K1.



2. The angle can be determined by two planes (p1, p2). That is, first click plane 1 (p1) and then the second one (p2).

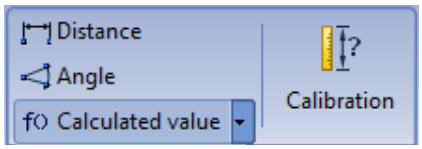


   The planes intersect each other forming two adjacent angles (α and ß). The following calculation α=180-ß can be used. To recalculate simply select the corresponding adjacent angle holding down <CTRL> and clicking the adjacent angle.

   The angle consists of dependent elements. Deleting the elements deletes the measurement.

5.9.3 Calculations

To open a window for creating calculations click the **Calculated value** button.



Enter the name of the calculation, tag (label), description (comment) and select unit of measurement. Select between millimetres (mm), degrees (°), percentage (%) or leave the field empty.

On the *Measurements in analysis* field are displayed all measurements and calculations included in the analysis type.

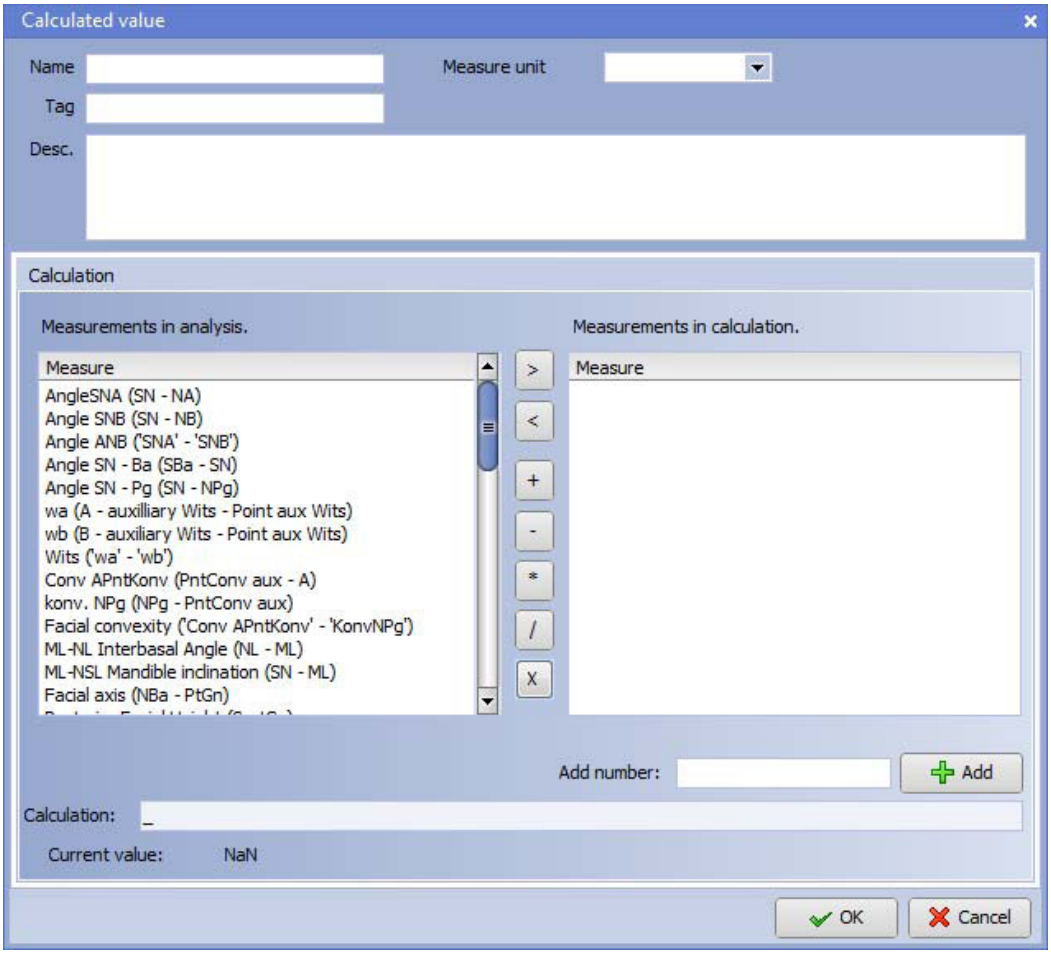
On the *Measurements in calculation* field are displayed all measurements used for creating the calculation in question.

The *Add number* can be used to add number constant to the calculation.

The arrow buttons between these two fields can be used to select whether or not to include the measurements in the calculation.

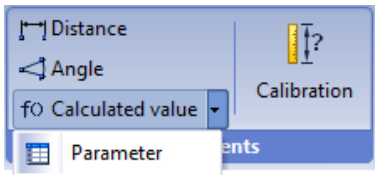
The other 5 (+, -, =, /, X) are calculation buttons.

The *Calculation* field displays the formula used in calculation.



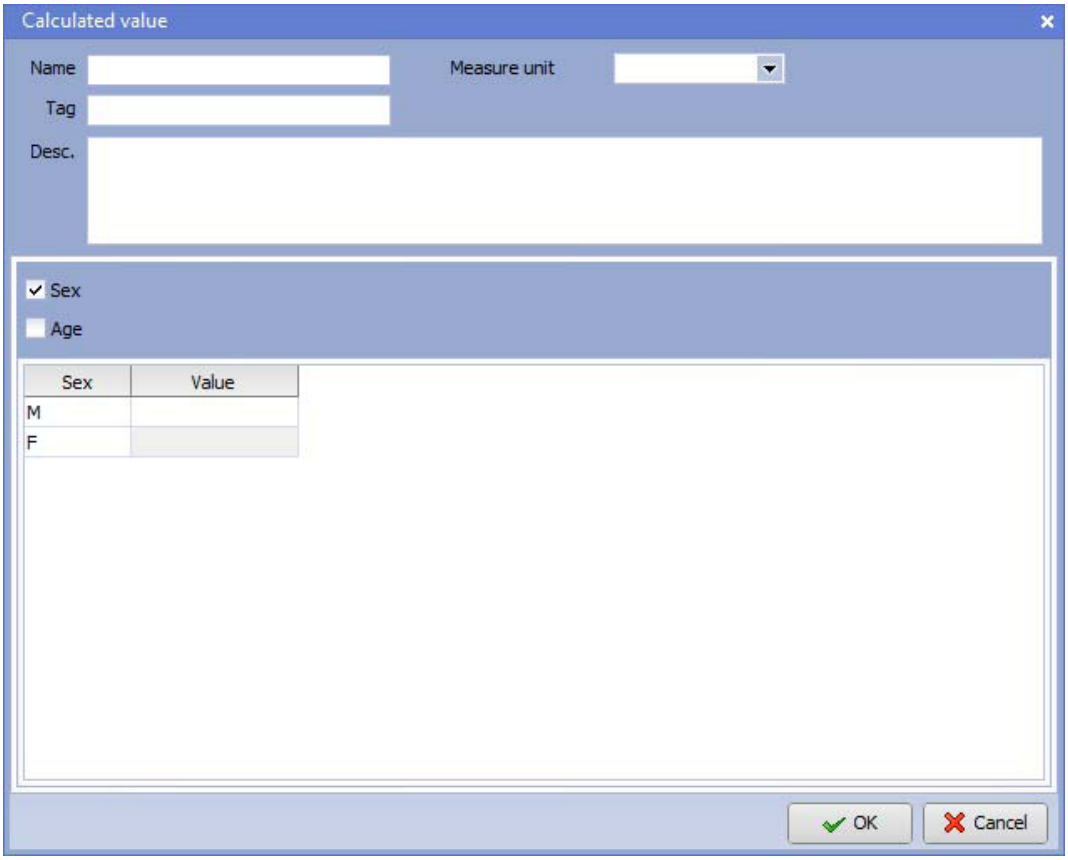
Parameter

To open a window for adding parameters click Calculated value and from the appearing drop-down menu select **Parameter**.

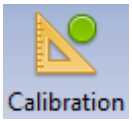


Enter the name of the parameter, tag (label), description (comment) and set measurement unit. Select between millimetres (mm), degrees (°), percentage (%) or leave it blank.

Parameter value may depend on patient's sex and/or age (check the corresponding boxes).

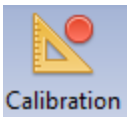


5.10 Calibration



If there are some distance measurements in the analysis, the image must be calibrated before printing.

The images taken with Planmeca X-ray units are automatically calibrated. The green point on the calibration button indicates no calibration is required.



If calibration is necessary there is a point on the calibration button.

Calibration information may not be available for

- cephalometric images imported to Planmeca Romexis,
- images that are not in DICOM format,

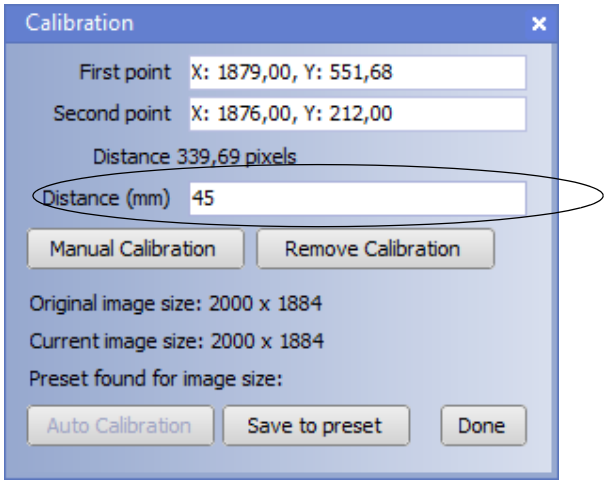
and for

- images acquired with other manufacturers' imaging devices.

To calibrate the image:

1. Click the **Calibration** button.
2. On the ruler click the first and second points.

3. In the following window enter the distance between the first and the second point.



4. Click **Done**.

   By selecting **Save to preset** the next time when importing an image of the same size the image is automatically calibrated. The calibration info is visible in Image format window, see section 13.3 “Image formats” on page 97.

NOTE **The calibration is executed only in the *Analysis* tab, not in the *Analysis type* tab. The analysis type cannot be calibrated.**

6 ANALYSIS SUPERIMPOSITION

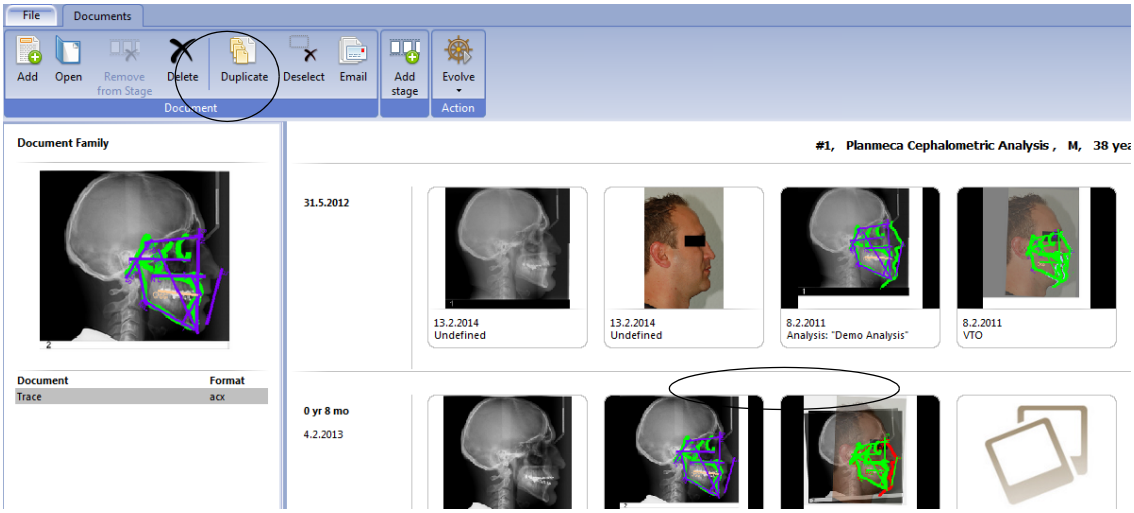
Superimposition tools allow comparing one analysis with another analysis or a photograph with an analysis. Any number of analyses and photographs may be superimposed.

To superimpose analysis over analysis, the used cephalometric landmarks need to be selected.

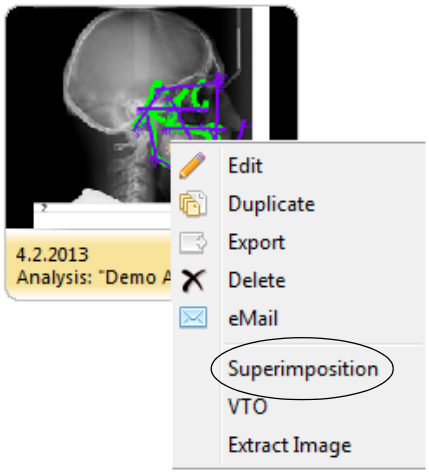
For example, by selecting the landmarks **S** (Sella turcica) and **N** (Nasion), both analyses are superimposed according to these two points as superimposition reference points. The size of images and image rotation are adjusted accordingly.

6.1 Starting a new superimposition

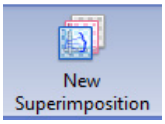
1. Select an analysis in the *Documents* tab.



2. Right-click on the thumbnail and select **Superimposition**.

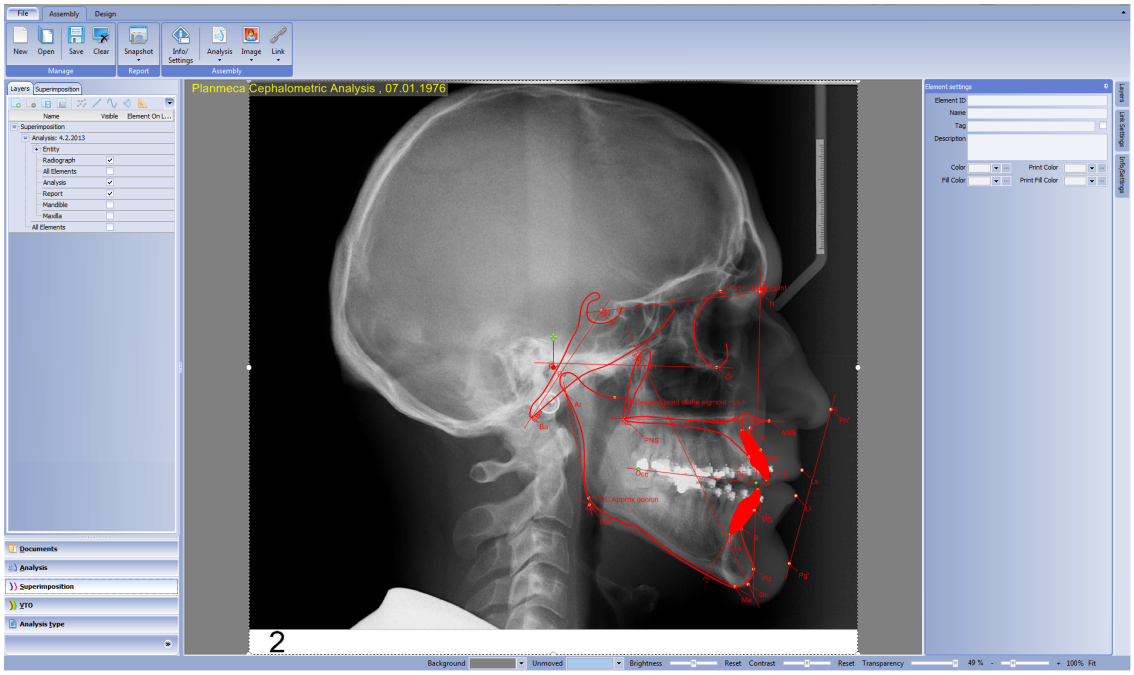


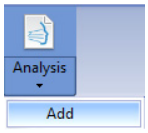
OR



Click the **New Superimposition** button in the Main Toolbar.

3. The following window opens





4. To add another analysis for superimposition, click the **Analysis** button on the Main Toolbar and then click **Add**.

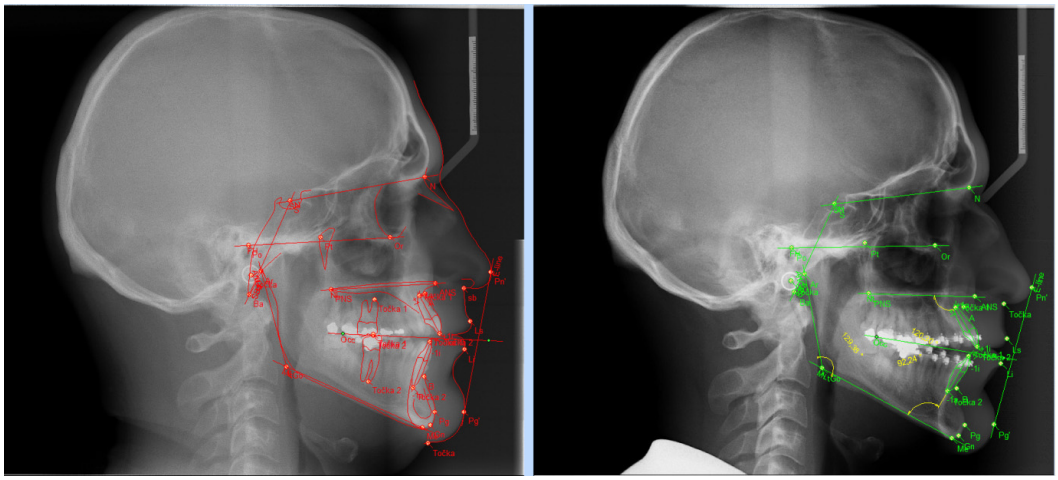
   A list of analyses appears.

5. Select an analysis by double-clicking on it.

   An analysis opens in the screen.

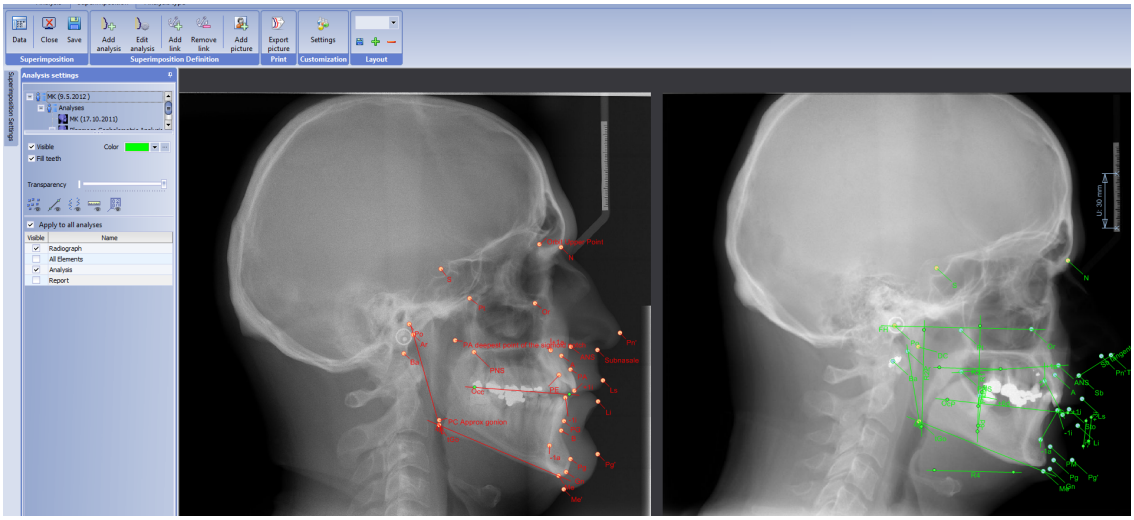
   The analyses are added one by one and displayed side by side so that the analysis you opened latest is always right most on the screen.

To keep track of the superimposition process it is recommended to superimpose each added analysis one after another.

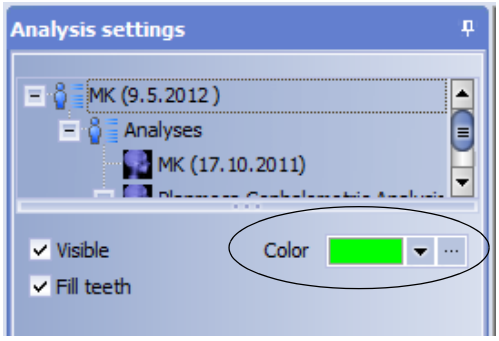


The analyses are opened with default colours.

The first analysis shows in red, the second in green, then third in sky blue, the fourth in purple and so on.



The colours can be temporarily modified by changing the colour in the *Analysis settings* window.

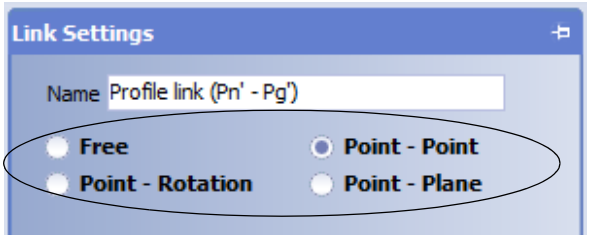


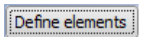
To change the colours permanently go to *File* tab, select *Settings* and *Colors* tab.

6. Select an analysis in the tree to superimpose it over the first analysis.

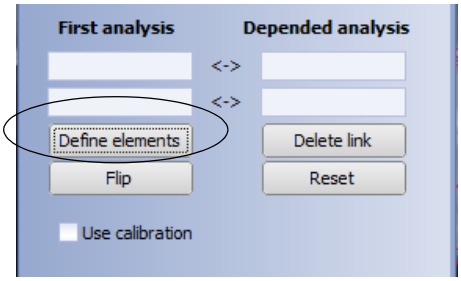
7. Click on the Link 1 under the respective analysis.

8. Select among four superimposition types. See image below.

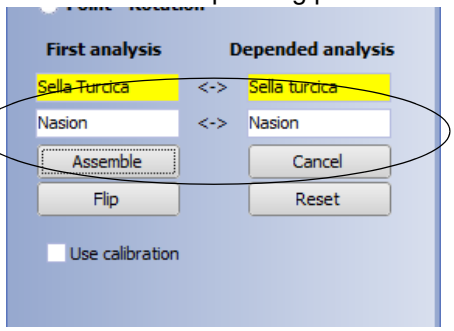




9. Click the **Define elements** button.



10. Select the corresponding points from both analyses and click **Assemble**.

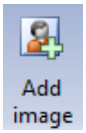


The linked fields will appear in yellow.

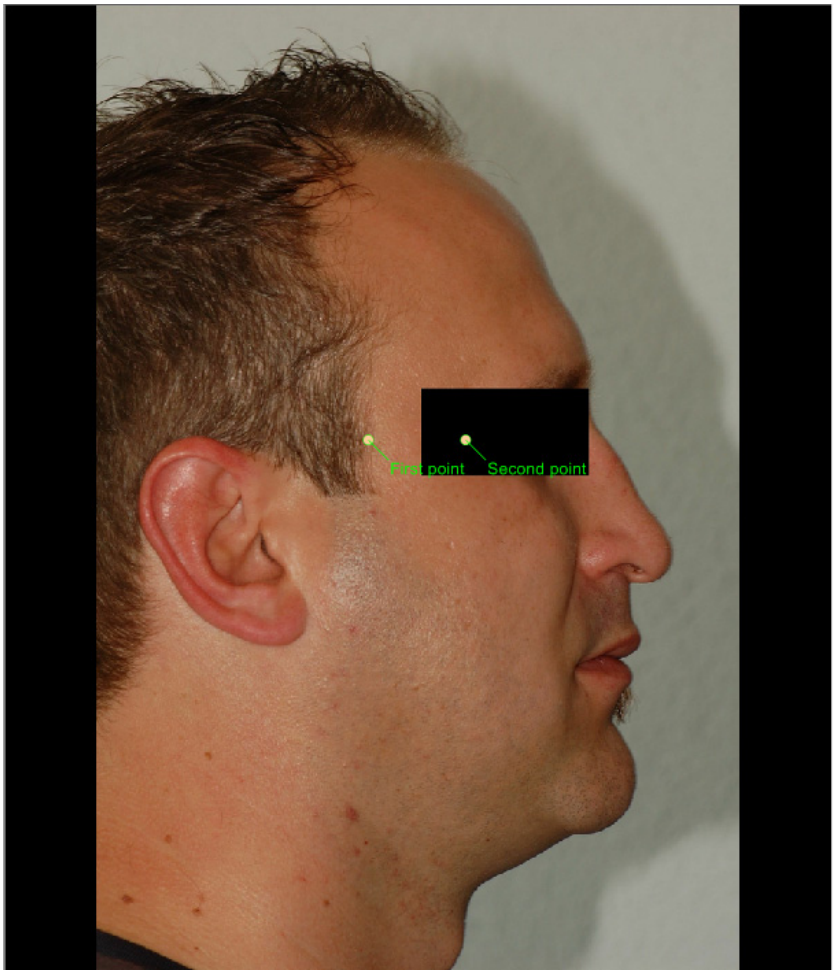
11. To return to the window for linking more analyses click the arrow on the **Link** button and select **Add**, then repeat the procedure.

NOTE **By using predefined superimposition links the link is applied immediately after the second analysis is added. To use predefined superimposition links see section 5.8.1 “Defining superimposition links” on page 37.**

6.2 Superimposing photographs over analysis



1. To add a photograph, click the **Add image** button.
2. A list of photographs and radiographs is opened.
3. Select the photograph for superimposition.
4. Click **OK**.
5. The image opens with two marked points, *First point* and *Second point.*



6. Drag the both points to the positions that will be used as superimposition reference points.

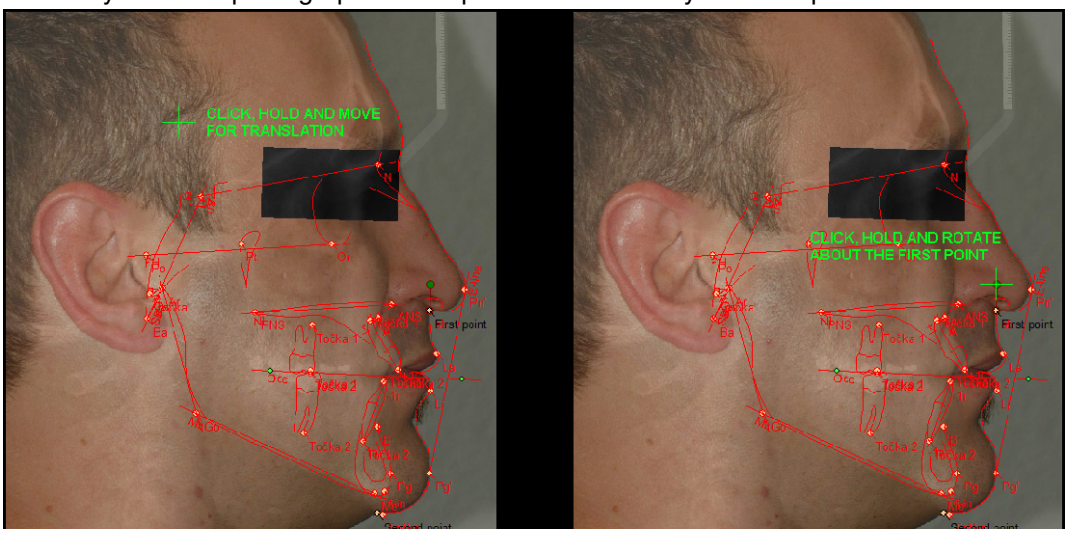
   Typically these points are included in the analysis with which the photo is superimposed.

7. Click the **Save analysis and return** button to return to the Superimposition window.

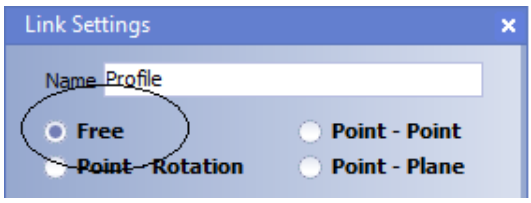
NOTE **In case the first analysis does not include points included in the superimposed photograph, select it from the tree and click the Change analysis button. A window is opened where you can change elements as desired. They can be added and deleted. All changes can be viewed in the Superimposition window, see section 6.4 “Analysis and superimposition relation” on page 50.**

6.3 Manual positioning of images and analyses

The analysis or the photograph can be positioned manually for more precise match.



Click on the profile link and select **Free** after which the superimposed analysis can be manually dragged, rotated and scaled, while the link window is open.



6.3.1 Moving images

Select the analysis or the photograph and drag it anywhere on the screen while holding down the left mouse button.

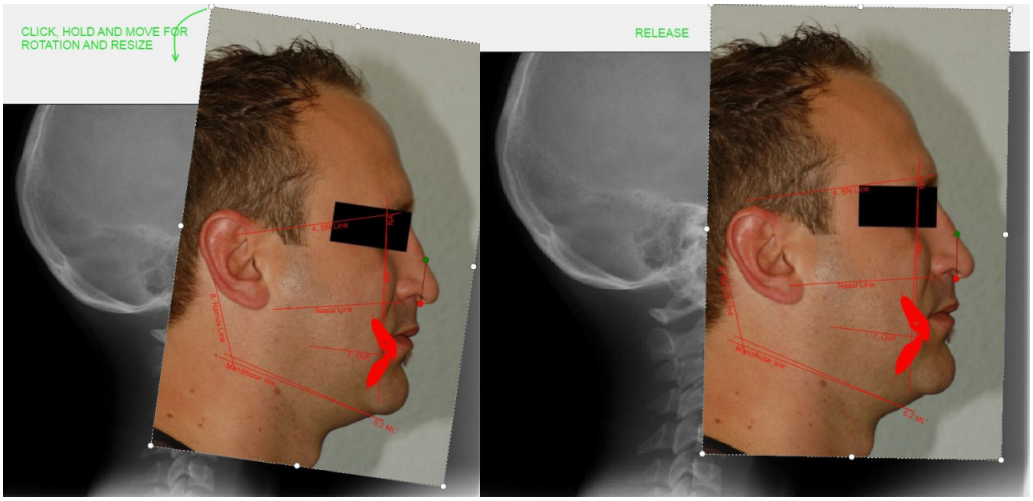
6.3.2 Rotating images

Rotate the analysis or photograph by clicking the green cross hairs by the First point, while holding down the left mouse button.

The analysis or image will be rotated around the First point.

To resize and rotate an image or superimposed analysis grab and drag it from its corner.

To reset the position of the analysis or image, click the button which can be found in the Link box in the dashboard.

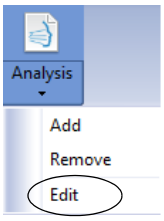


6.4 Analysis and superimposition relation

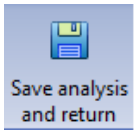
Any changes made to the analysis can be observed in the corresponding superimposed image. Moving the linking points will modify the interrelated positions of the superimposed analysis.

An analysis can be modified by:

- Saving it in the *Analysis* tab and then opening the corresponding superimposition containing the analysis.
- Clicking Analysis and **Edit** in the *Superimposition* tab.



A window is opened where you can make changes to the analysis.



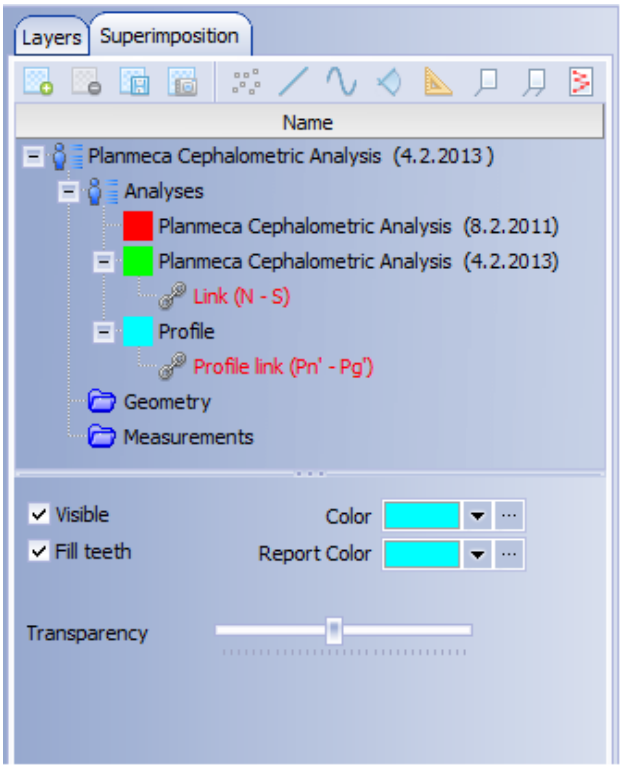
To accept the changes and return to the previous window, click **Save analysis and return**, otherwise click Cancel. Having deleted the linking points by mistake, the original version of the analysis will be kept.

6.5 Adjusting analysis settings

In the *Superimposition tab* you can adjust

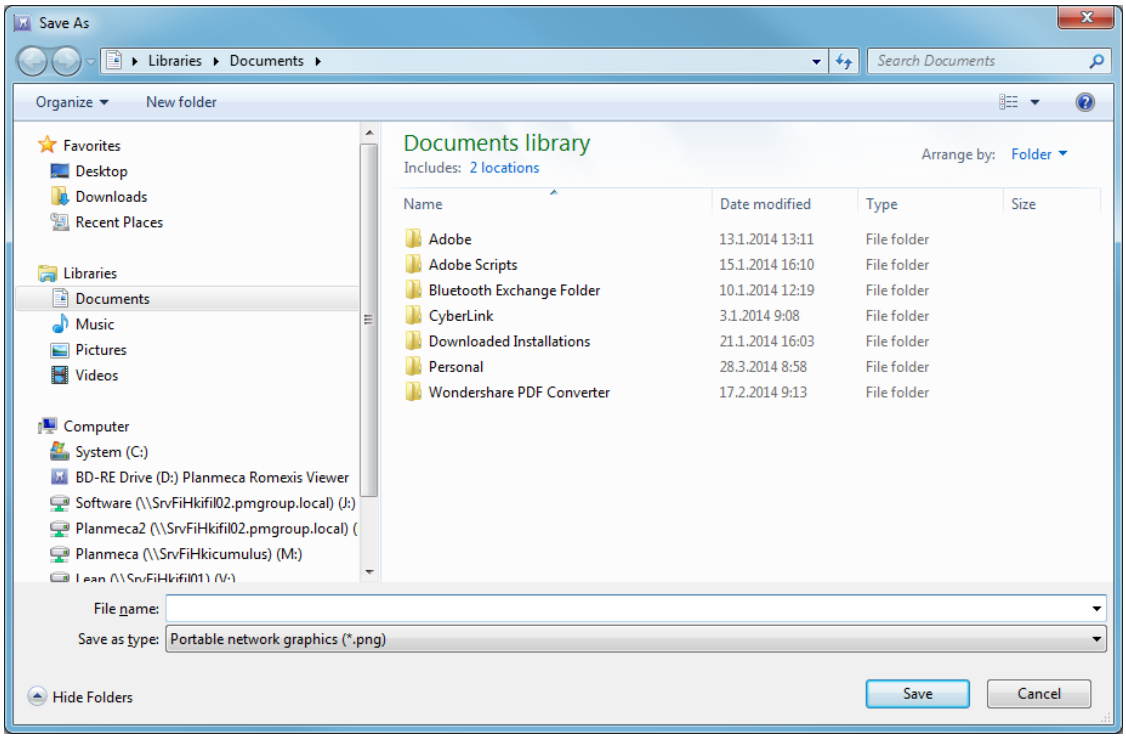
- Visibility of the analysis (by selecting/deselecting the *Visible* check box)
- Filling of teeth (by selecting/deselecting the *Fill teeth* check box)
- Colour (by selecting the new colour from the drop-down menu or by clicking this button.)
- Transparency levels (by moving the slide bar)

You can also select whether to show/hide points, planes, measurements, InfoBox and layers



6.6 Exporting superimposed images

1. Click the arrow on the Snapshot button and select **Save as**.
2. In the following window select the folder where you want to save the image, enter the name with which the exported image will be saved and select **Save**.



7 VISUAL TREATMENT OBJECTIVE (VTO)

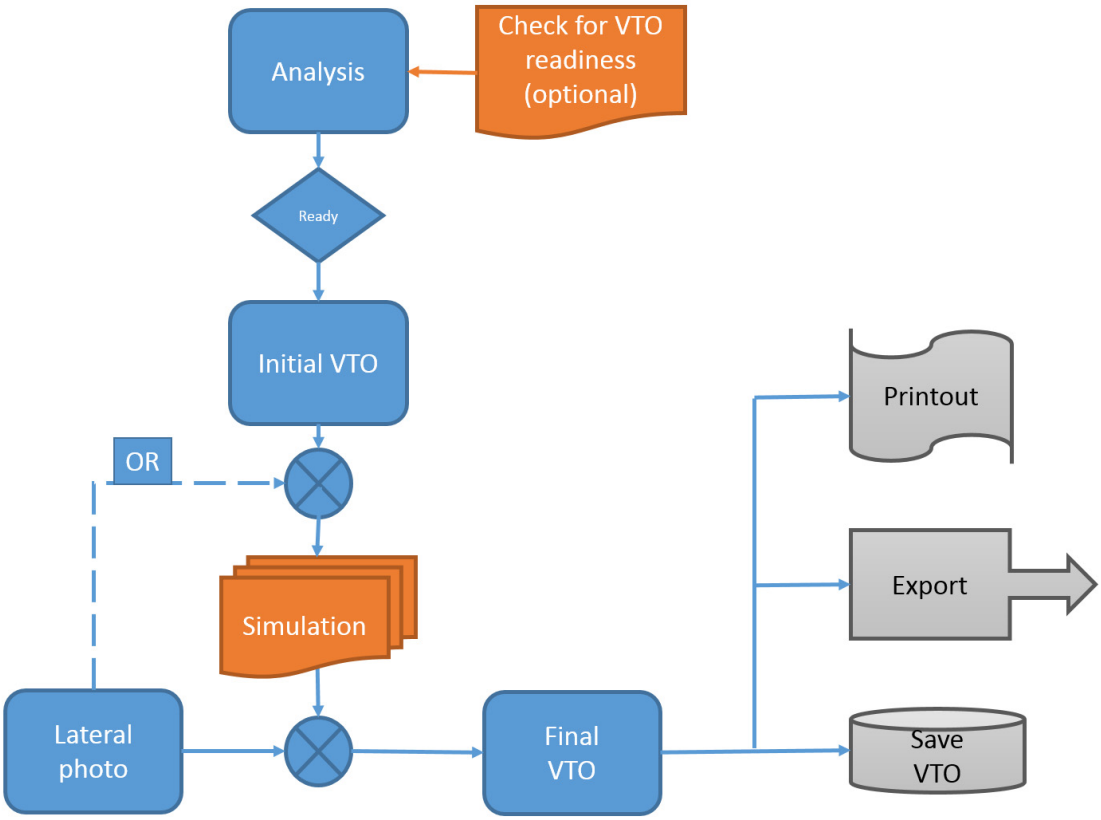
NOTE **VTO and prediction image are tools with which the user can simulate and estimate treatment outcome. They are not meant to be taken as accurate treatment outcome predictions.**

7.1 Making a VTO from analysis (workflow)

1. Check for VTO readiness of the analysis type in the *Analysis* tab.
2. Start a new VTO.
3. Add a lateral image to VTO.
4. Simulate by

- moving elements to desired position
- calculating prediction

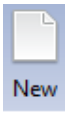
NOTE **It is not necessary to place a lateral image to VTO in order to create a simulation and treatment plan.**



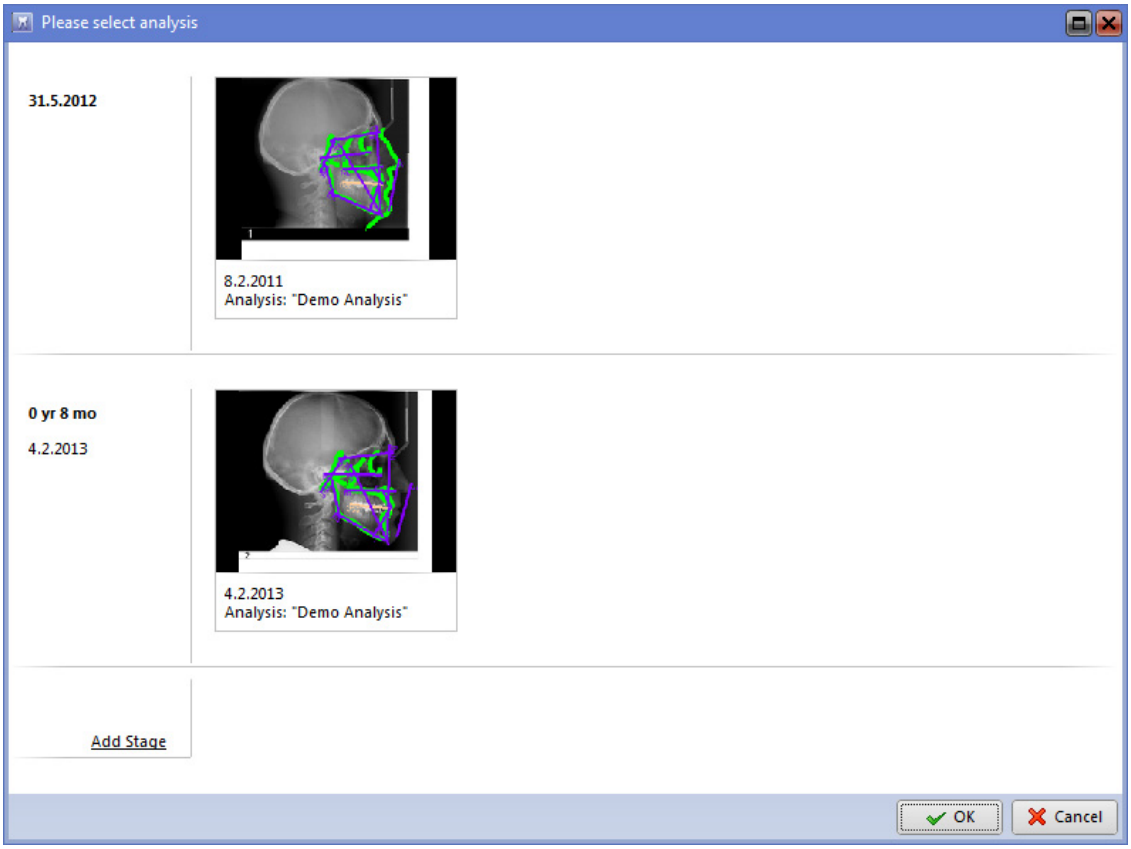
7.2 Preparing for VTO

NOTE **Not all analyses include all the elements and data needed to create a VTO. To check if an analysis is prepared for VTO use the VTO ready button in the Analysis view's > Design tab.**

7.2.1 Selecting an analysis

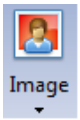


1. Start a new VTO by clicking the **New VTO** button in the VTO tab.
2. In the opening dialogue select the desired analysis and click **OK**.

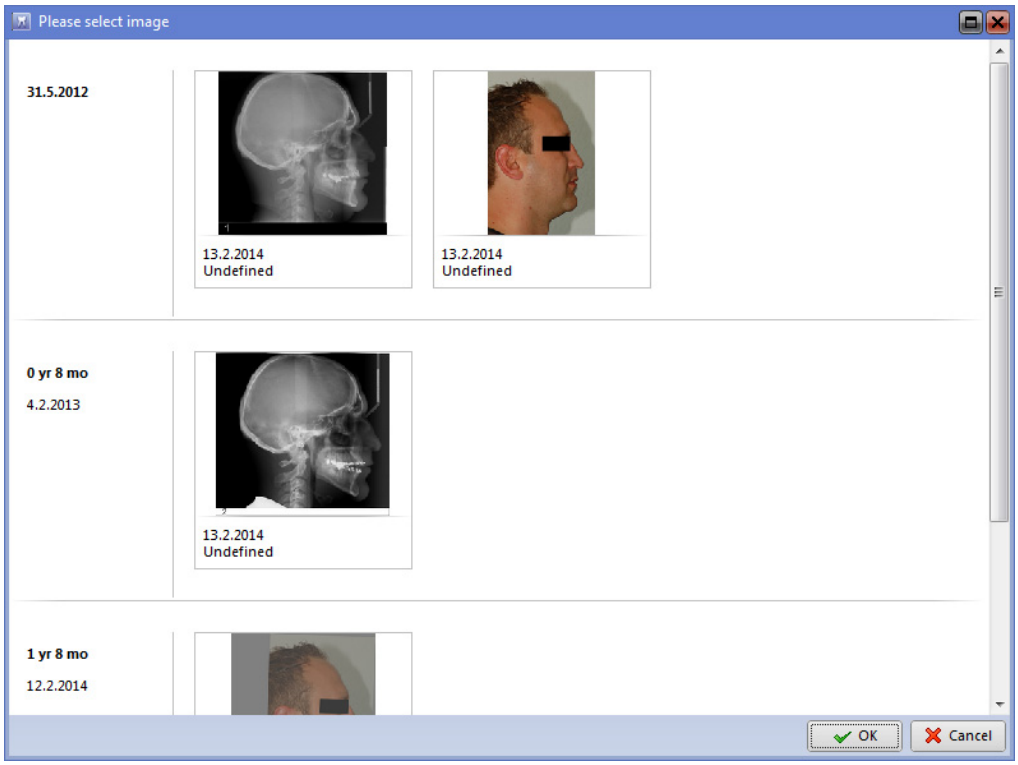


7.2.2 Adding an image

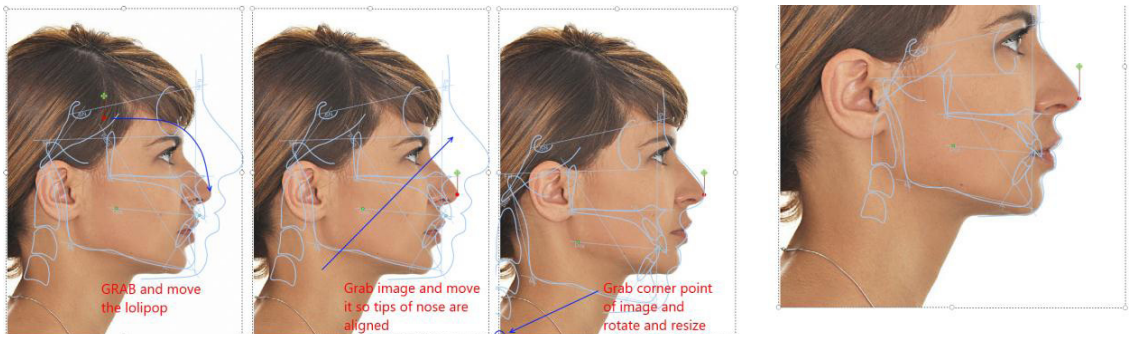
In order to create a prediction a lateral photograph of a patient before the treatment, must be added.



1. Click this button in the *Visual Treatment Objective* tab.
2. In the opening window select the desired image and click **OK**.



3. The added image does not necessarily fit directly into the initial landmarks.
4. Position the image by using a prominent feature of the face (for example the tip of the nose) as a guide.
5. Align the tip of the nose on the image and on the initial network (by default the grey one) as follows:


GRAB and move the lolipop
Grab image and move it so tips of nose are aligned
Grab corner point of image and rotate and resize

- Place the red dot of the alignment tool on a prominent place of the face (for example the tip of the nose).
- Align tip of the nose on the image and on the initial landmarks (by default the grey one)
- Drag the image from a corner to resize and rotate until correctly aligned (use soft tissue profile as reference).

7.3 Simulation

7.3.1 Elements

There are element in three different states:

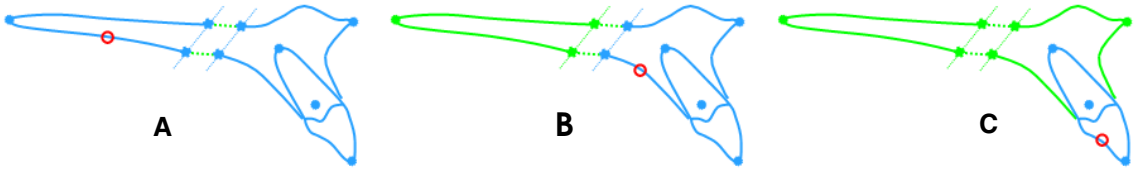
- Unmoved
- Highlighted – The mouse pointer (green crosshairs) is on top of it; the element turns light blue. An element can be highlighted by moving the mouse pointer next to it.
- Selected – after left-clicking on a highlighted element. The element turns red.

The elements in VTO are predefined and the analysis should be VTO ready so that a VTO can be created.

Elements in maxilla

You can move:

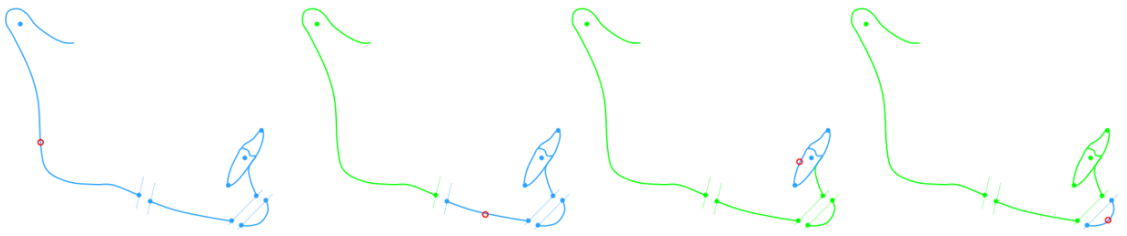
- The whole maxilla by selecting a region of posterior part of maxilla as in image A.
- The anterior part of maxilla and upper incisor as in image B.
- The upper incisor as in image C.



Elements in mandible

You can move:

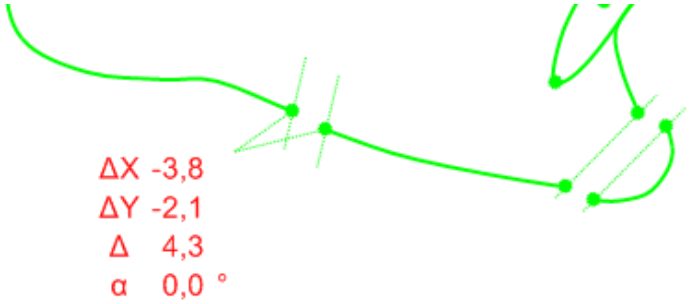
- The whole mandible by selecting the posterior part of mandible as in image A.
- The anterior part of mandible by selecting the upper incisor and chin as in image B.
- The lower incisor as in image C.
- The chin as in image D.



7.3.2 Moving an element

Hard tissue elements can be moved using the mouse or the keyboard and the soft tissue profile adapts accordingly.

When moving an element a box indicating the relative distance and rotation in relation to the dependent element or global origo is shown.



Translation

Select an element. When moving it with the left mouse button the element will follow.

Double-clicking on a box opens a dialog box, where X and Y distances can be manually entered.

Rotation

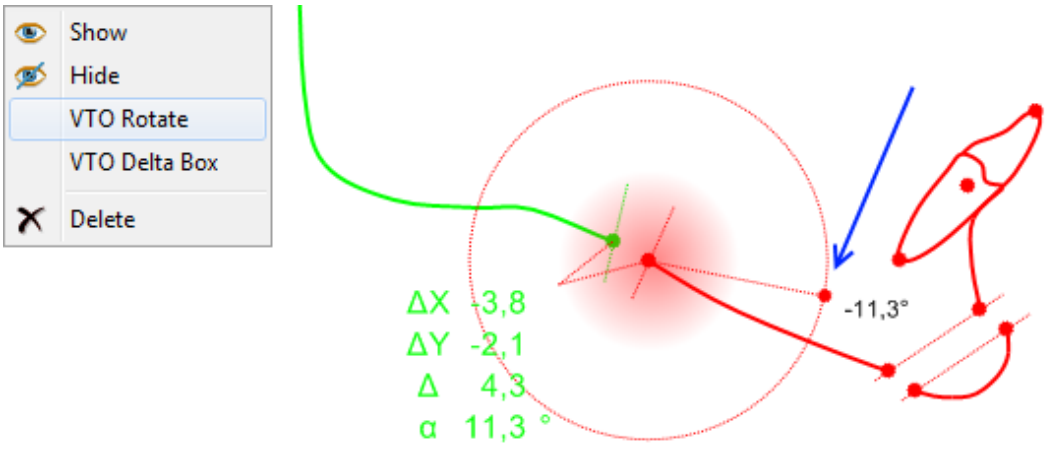
Select the point of rotation by holding down the **Ctrl** key and clicking with the left mouse button on the desired element.

The element rotation centre is marked with a red point.

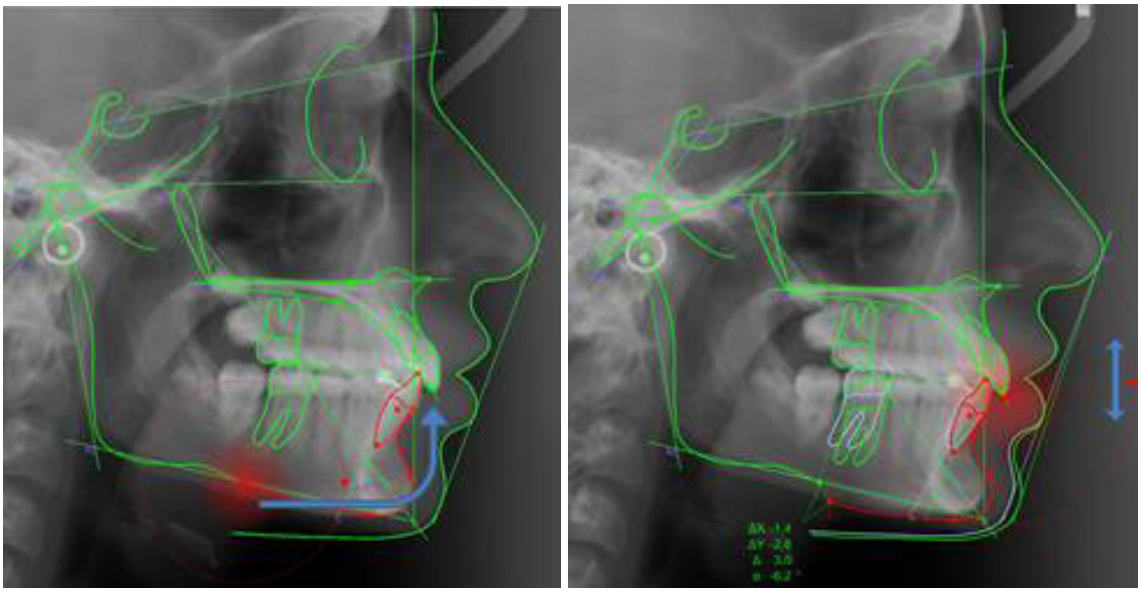
To change the location of the rotation centre, drag it anywhere in the image using the left mouse button.

By dragging the red point of the red circle around the rotation centre the element can be rotated with the mouse.

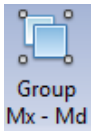
Right-clicking on the element and selecting **VTO Rotate**, or double-clicking on the Delta Box which contains the rotation information, the element rotation angle can also be manually entered.



For example to rotate the frontal part of the mandible using maxillary incisor incisal edge as the rotation centre, Ctrl left-click on the element, drag the element rotation centre (red dot) to the maxillary incisor incisal edge, and rotate the element by dragging the red point on the red circle around the rotation centre.

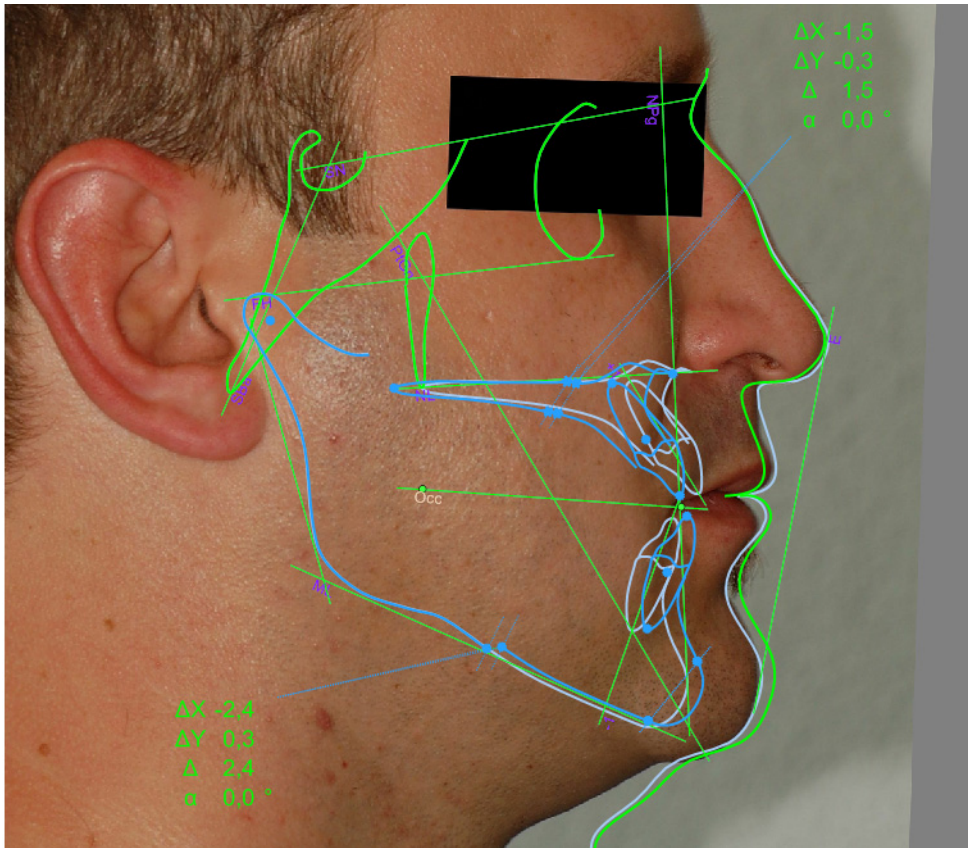


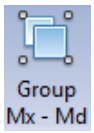
7.3.3 Moving maxilla and mandible as a group



To move maxilla and mandible as a group with all linked elements such as click on the **Group Mx-Md** button.

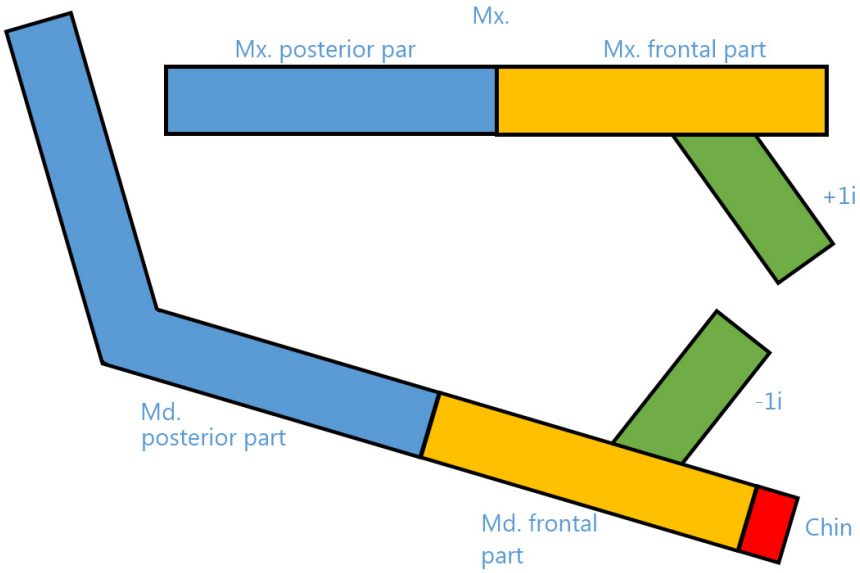
The selected regions turn blue.





Connections

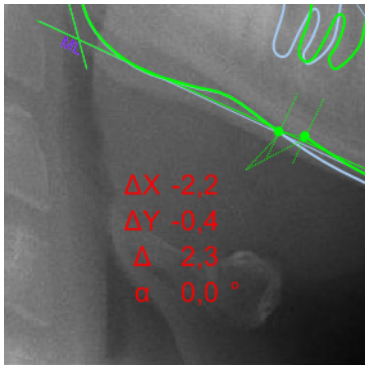
Some elements are connected which means that the elements that are dependent of the element that is been moved. This is valid for both translation and rotation.



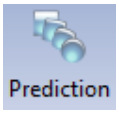
For example if the Mx Blue Mx orange is moved the upper incisor will follow.

7.3.4 Moving a Deltabox

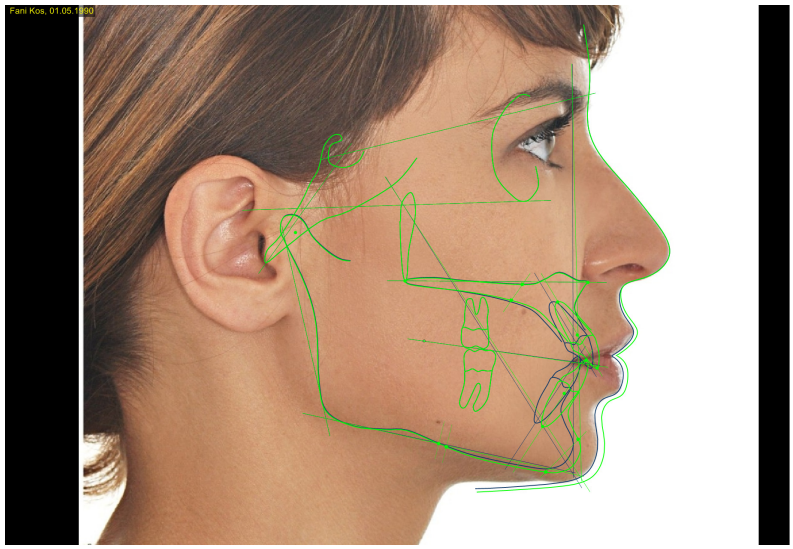
To move a deltabox simply drag it to the desired location. The created deltaboxes are automatically added to the treatment plan on the *Additional* layer.



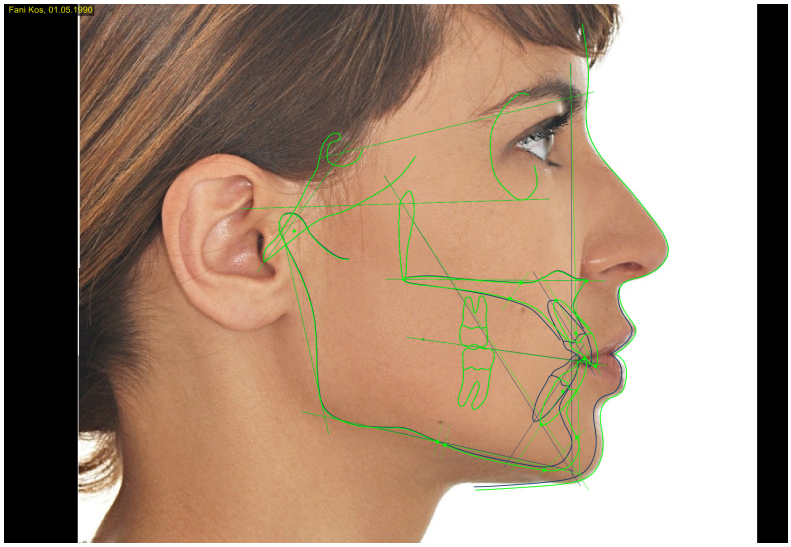
7.3.5 Prediction image



Soft tissue prediction image can be generated after a lateral photograph of the patient is inserted.



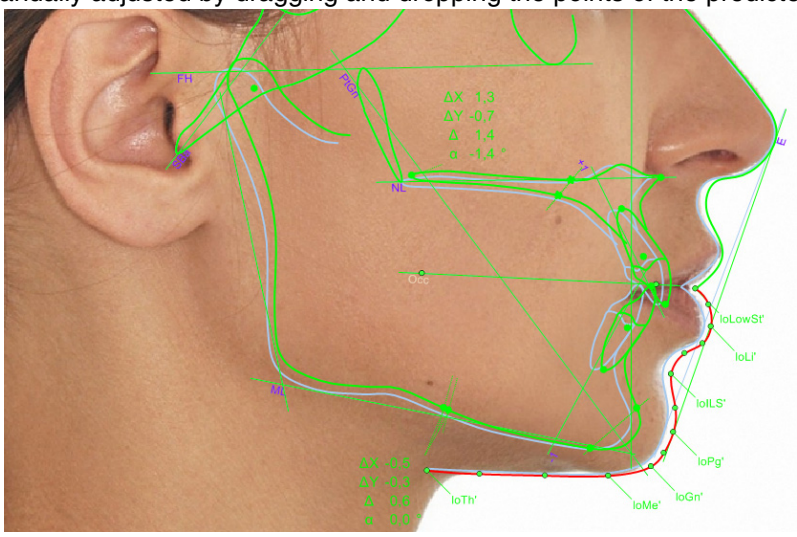
Before



After

After any changes to the treatment simulation the soft tissue prediction image has to be generated again using the prediction button.

If the user is not satisfied with the prediction result, the predicted soft tissue profile can be manually adjusted by dragging and dropping the points of the predicted soft tissue silhouette.



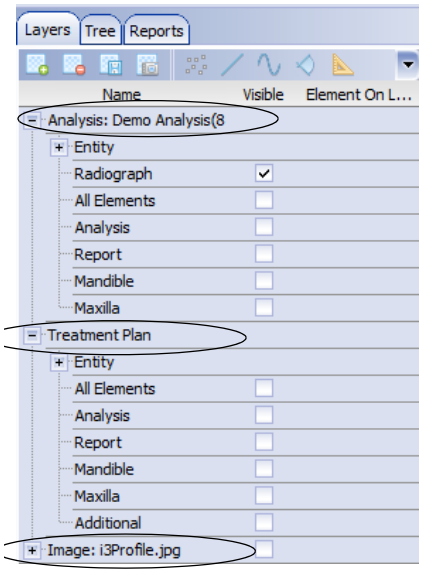
7.3.6 Creating measurements

Measurements can be created in the same way as described in section 5.9 “Measurements” on page 38. They can be created between elements inside VTO, but also between initial and VTO analysis. When created they are automatically added to the treatment plan into the *Additional* layer.

7.3.7 Layers

Layer tree consists of the following elements:

- Analysis (initial analysis used to start the simulation, shows usually in grey)
- Treatment plan (at the beginning the same as analysis used, shows usually in green)
- Profile image if inserted

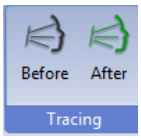


The same rules apply for layers as described in section 5.1 “Layers” on page 13.

7.3.8 View states

The following tools can be used for visualisation of the before and after views of treatment simulation and prediction.

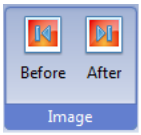
Tracing



- Before – initial analysis state
- After – treatment goal
- Both selected – shows both initial state and treatment goal

If no tools are selected, no image is shown or the view state is controlled from the *Layers* tab.

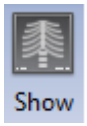
Image



- Before - when switched on will show initial lateral photograph
- After - when switched on will show treatment prediction photograph

If no prediction image has been calculated, the **After** button will initiate the calculation.

X-ray



- Shows an x-ray image from initial analysis

If no tools are selected, no image is shown or the view state is controlled from the *Layers* tab.

7.3.9 Layer management and element view toggle buttons

Buttons are divided into three groups:

- Layer management buttons – manipulating layers in Treatment Plan only
- Element view button – toggle view states for elements both in Analysis and Treatment Plan
- Tag view button – toggle view states for element tags both in Analysis and Treatment Plan

For more information on using the visualization tools see section 8.9 Layers and element visualization.

7.4 Saving VTO

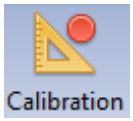
To save the VTO click this button.

8 CREATING REPORTS

NOTE **If there are some distance measurements in the analysis, the calibration needs to be done before printing. The images taken with Planmeca X-ray units are automatically calibrated. The yellow calibration button indicates that no calibration is required. For more information see section 5.10 “Calibration” on page 42.**

NOTE **The saved reports show in PDF format in the Planmeca Romexis Imaging module in the Imaging browser’s *Attachments* tab. The views can also be saved and automatically transferred to Planmeca Romexis.**

8.1 Creating a report

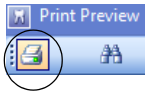


If you need to calibrate the image (the button is red) see section 5.10 “Calibration” on page 42 for more information.

To print a report:

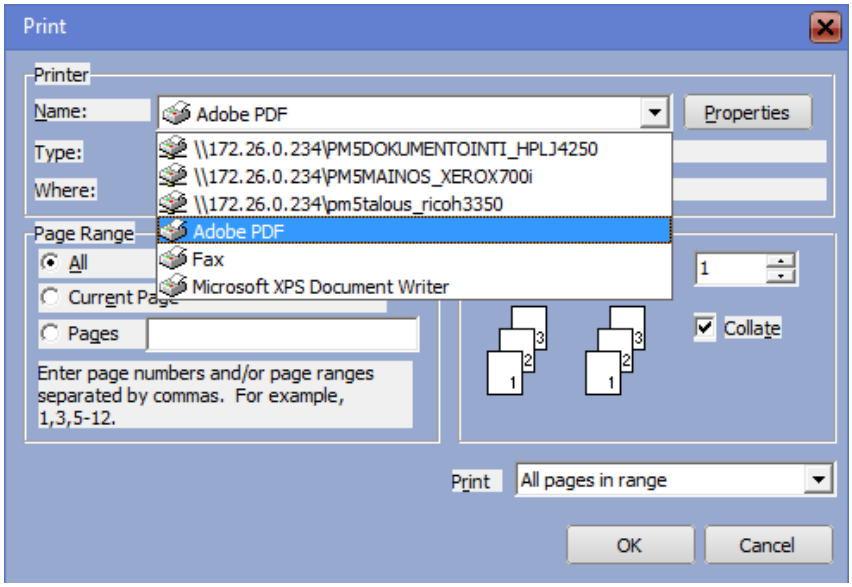
1. Click this button.

   A preview window is opened with the last used printout option.



2. To print the report click this button on the top left corner of the window.

3. In the following window select the necessary settings and click **OK**.



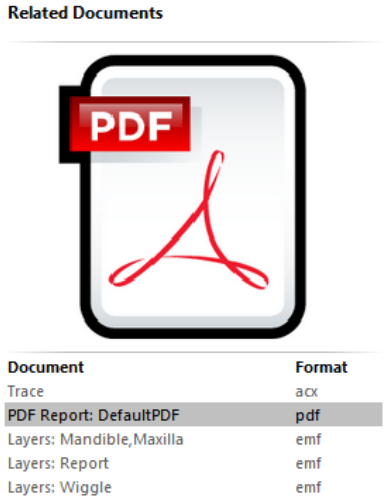
To edit printout continue to section 8.5 “Customising reports” on page 70.

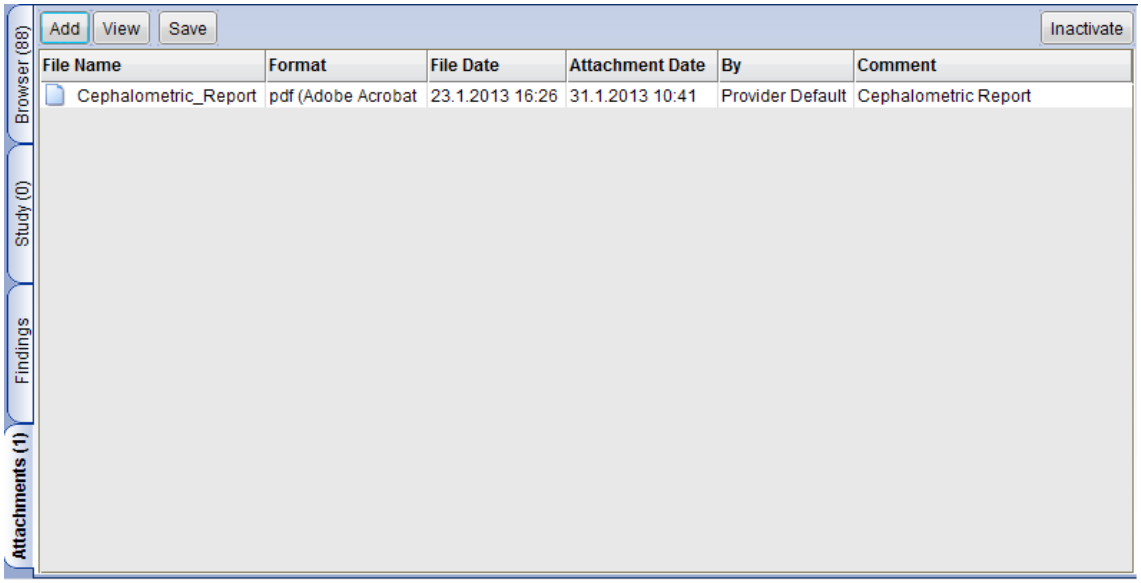
8.2 Saving report as PDF

To save report as PDF in the databox click on this button.

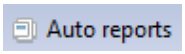
The report opens on the screen.

The report will be visible in the *Documents* tab in the Related Documents view when the respective analysis is selected, and when closed it will be moved to the *Attachments* tab of Planmeca Romexis 2D imaging module.





8.3 Automatic report creation

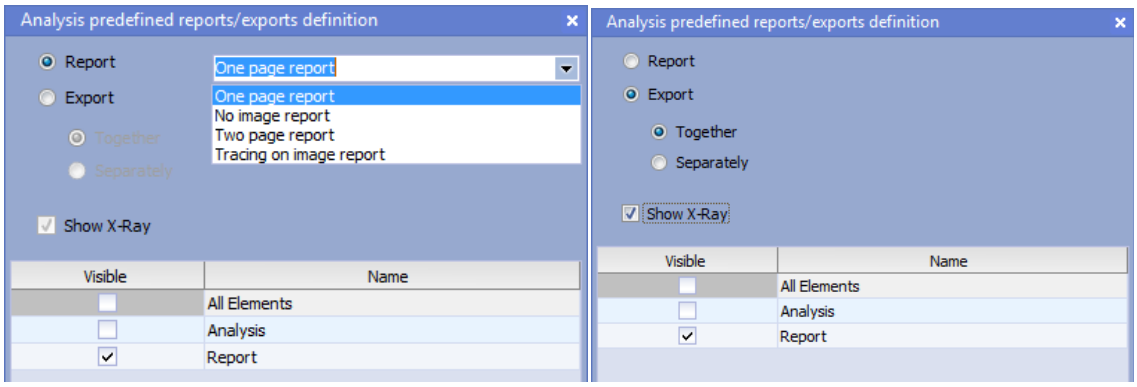


To generate and/or export an automatic analysis report click the **Auto reports** button. All listed reports will be automatically generated every time the analysis is saved.

NOTE **It is recommended to configure automatic reports when creating the analysis type. Then it will be automatically applied to all analyses made with the same analysis type.**

To add, remove or modify a report use the following buttons.

Clicking the add button (+) opens a new window where you can select between *Report* or *Export* options. For additional options see image below.



8.3.1 Report options

There are three different report options to choose from:

One page report

One page report includes patient information, radiograph, elements on the report layer and measurement groups in table format.

No image report

One page report including measurement groups in table format

Two page report

Two page report including patient information and elements on the report layer on one page and radiograph and measurement groups in table format in another.

Tracing image report

8.4 Creating Excel reports

8.4.1 Exporting analysis to Excel

The excel tool can be used to export measurements, patient information, radiograph and report layer to MS Excel.

The data is exported in to three different worksheets: *Measurements*, *Image* and *Patient*. The Measurements worksheet shows measurements and calculations. The Image worksheet shows the radiograph and print layer and the Patient worksheet shows patient information.

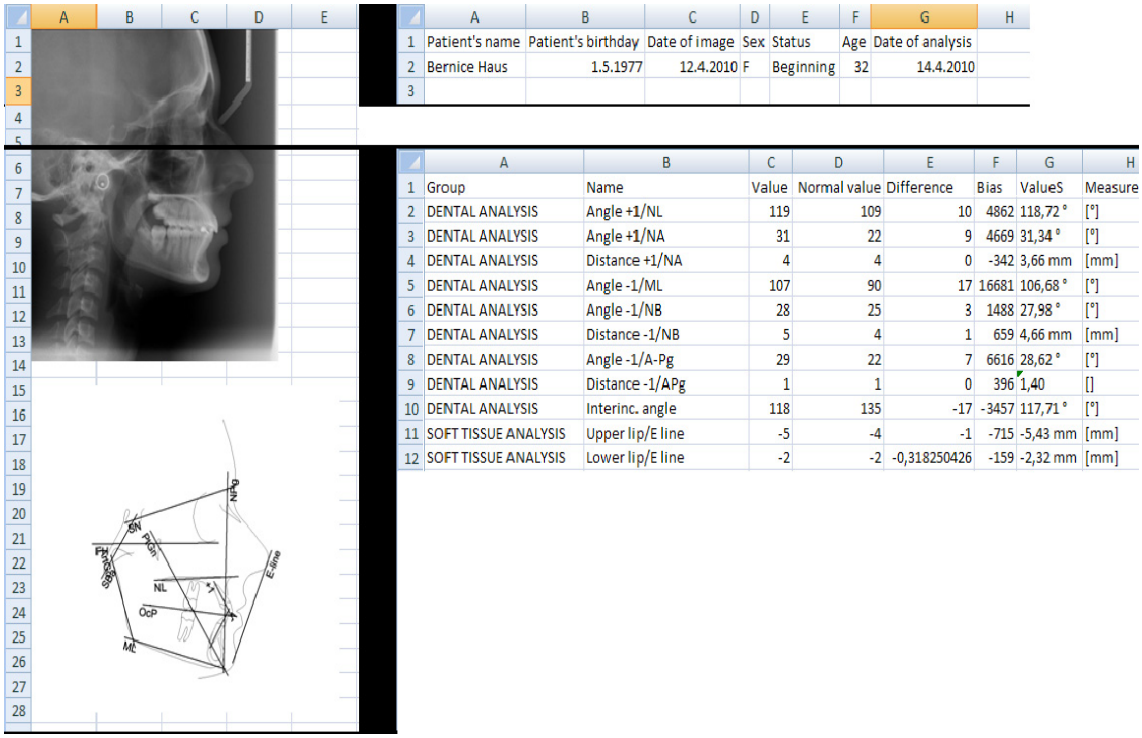
To export an analysis to Excel click the **Excel** button.

The data is automatically saved.

To select another template click the arrow under the Excel button to show other template options.

A predefined Excel template can be included in each analysis type.

The worksheet shows the radiograph, patient information and measurements.

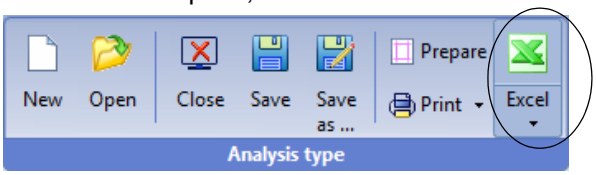


Patient's name	Patient's birthday	Date of image	Sex	Status	Age	Date of analysis
Bernice Haus	1.5.1977	12.4.2010	F	Beginning	32	14.4.2010

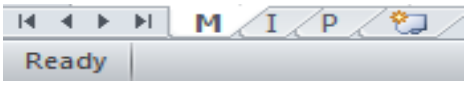
Group	Name	Value	Normal value	Difference	Bias	ValueS	Measure
DENTAL ANALYSIS	Angle +1/NL	119	109	10	4862	118,72 °	[°]
DENTAL ANALYSIS	Angle +1/NA	31	22	9	4669	31,34 °	[°]
DENTAL ANALYSIS	Distance +1/NA	4	4	0	-342	3,66 mm	[mm]
DENTAL ANALYSIS	Angle -1/ML	107	90	17	16681	106,68 °	[°]
DENTAL ANALYSIS	Angle -1/NB	28	25	3	1488	27,98 °	[°]
DENTAL ANALYSIS	Distance -1/NB	5	4	1	659	4,66 mm	[mm]
DENTAL ANALYSIS	Angle -1/A-Pg	29	22	7	6616	28,62 °	[°]
DENTAL ANALYSIS	Distance -1/APg	1	1	0	396	1,40	[]
DENTAL ANALYSIS	Interinc. angle	118	135	-17	-3457	117,71 °	[°]
SOFT TISSUE ANALYSIS	Upper lip/E line	-5	-4	-1	-715	-5,43 mm	[mm]
SOFT TISSUE ANALYSIS	Lower lip/E line	-2	-2	-0,318250426	-159	-2,32 mm	[mm]

8.4.2 Creating Excel templates

To create a template, click the **Excel** button.



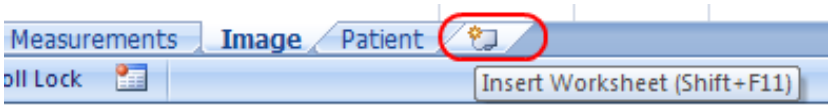
An Excel document opens and displays the following worksheets:



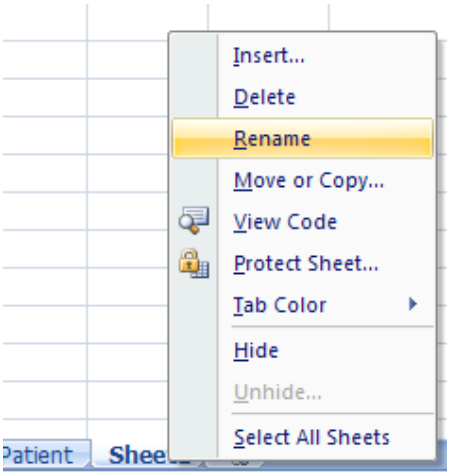
- Measurements – where all measurements are exported according to the print customization
- Image – where the X-ray image and analysis image are exported
- Patient – where the patient data is exported

Adding a new customized worksheet

1. Add a new worksheet (Shift+F11) and rename it as *Analysis*.
   Use the **Insert Worksheet** button to insert a new worksheet.



2. Right click on a new sheet tab and rename it as *Analysis*.
3. Drag the Analysis worksheet to the first position (you may leave it where it is as well).



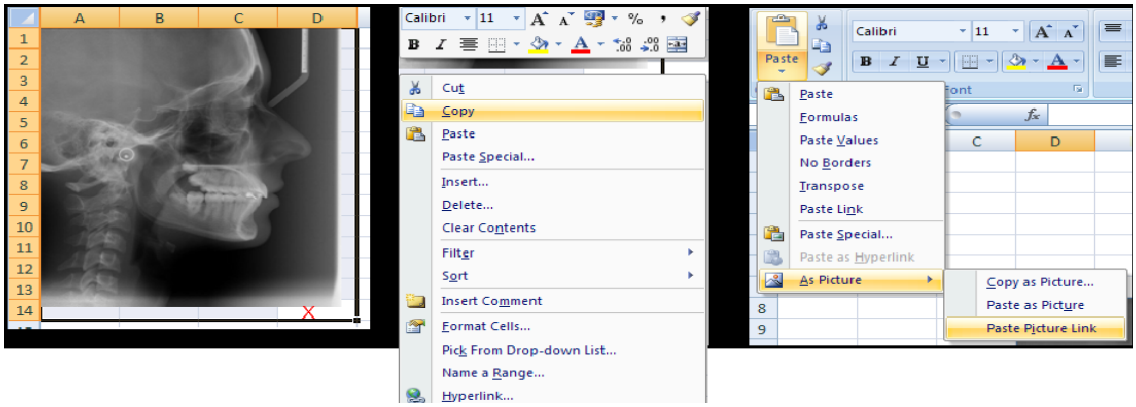
Image

To display the patient's radiograph and print layer in the *Analysis* worksheet, do the following:

1. Select cells of the image in the Image worksheet (or, delete the image to make selecting easier).

   The radiograph contains cells from A1 (top left corner) to D14 (bottom right corner).

2. Mark the cells.



3. Right-click outside the image and somewhere inside the marked fields area (for example on the red x point in the above rightmost picture).

4. Select **Copy** from the drop-down menu.

5. Select the Analysis layer and choose appropriate field for pasting.

6. Paste the copy by using Paste > As Picture > Paste Picture Link.

   Changing anything in cells from A1 to D14 will reflect in this linked copy.

   Proceed in the same way with analysis image.

Measurements

You can copy other measurement values, that is, standard values, names; plus, patient information and examination data (date the radiograph was taken, analysis date).

1. Copy exported values in the following way:

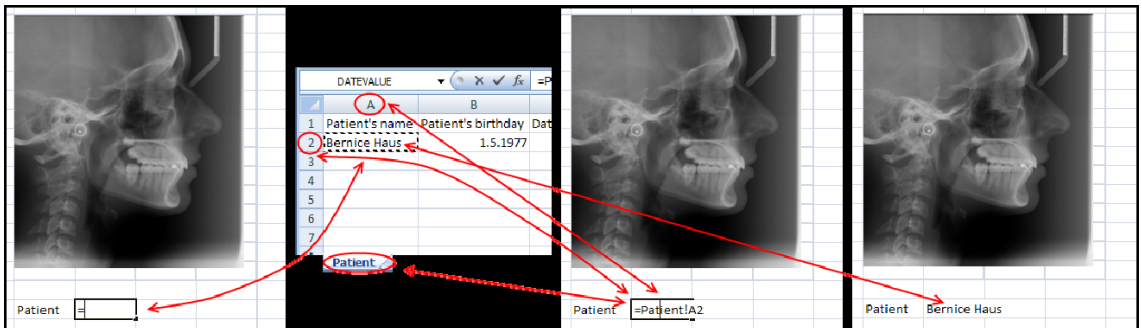
2. Select a cell in the *Analysis* worksheet and enter the equals (=) sign.

3. Select for example the Patient worksheet and the desired data and press **Enter**.

4. The cell value in the Analysis worksheet is “=Patient!A2” if you copied the patient’s name.

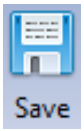
5. Edit the exported values according to personal preferences by changing font, using them in calculations, etc.

In the same way you can also copy for example the names of measurements, measurement values, etc.



6. Before saving the template delete all data in *Measurements*, *Images* and *Patient* worksheets.

7. Leave the *Analysis* worksheet as is.

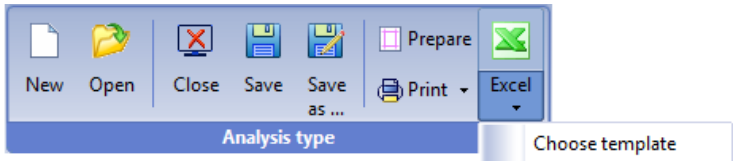


8. Click **Save**.

9. Select template and save analysis type as **.xlt** file.

NOTE **You need to save a template as template file format *.xlt.**

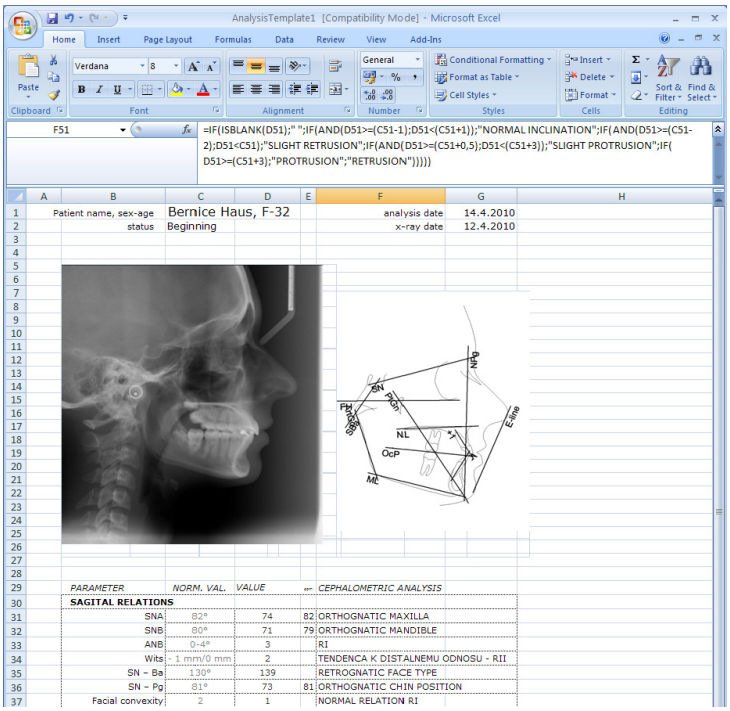
10. Quit Excel and load the saved excel template by clicking the **Choose template** button in the *Analysis type* or *Analysis* tab.



NOTE **To make the template file smaller and faster to load delete both images from *Image* worksheet before saving.**

NOTE **If the template is chosen in the Analysis type tab it will be available next time when the same analysis type is used.**

NOTE **It is recommenced to select the *Analysis* worksheet before saving for it to open on export.**



8.5 Customising reports

By customising reports you can define which measurements and groups show in the final report.

NOTE **If the print customizations are done in the Analysis type -tab they will be available next time the same analysis type is used. If they are done in the Analysis tab, they wont be available later.**

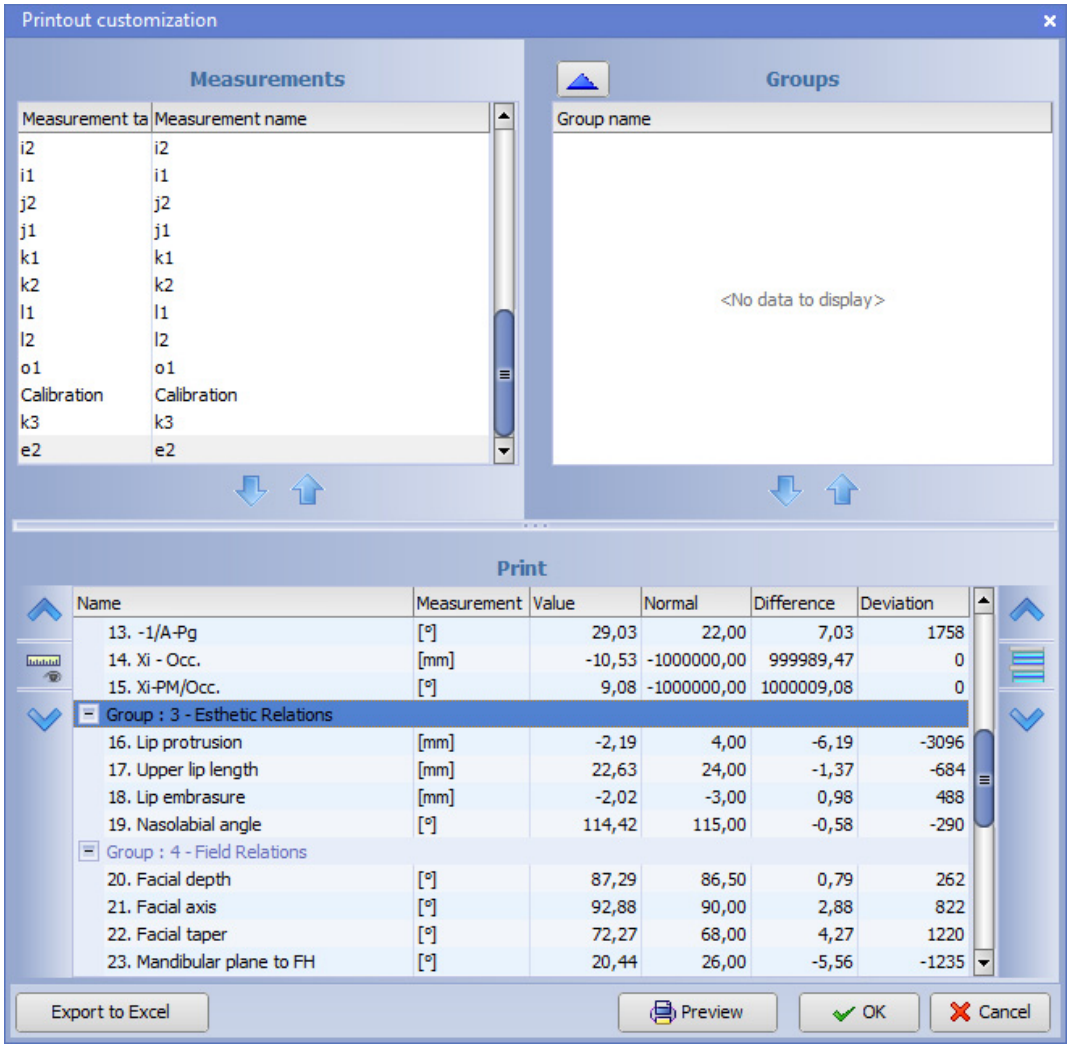
1. To open the Print customization window click the **Page** button.

2. The customization window opens.

In the *Measurements* field are listed all the measurements included in the analysis type.

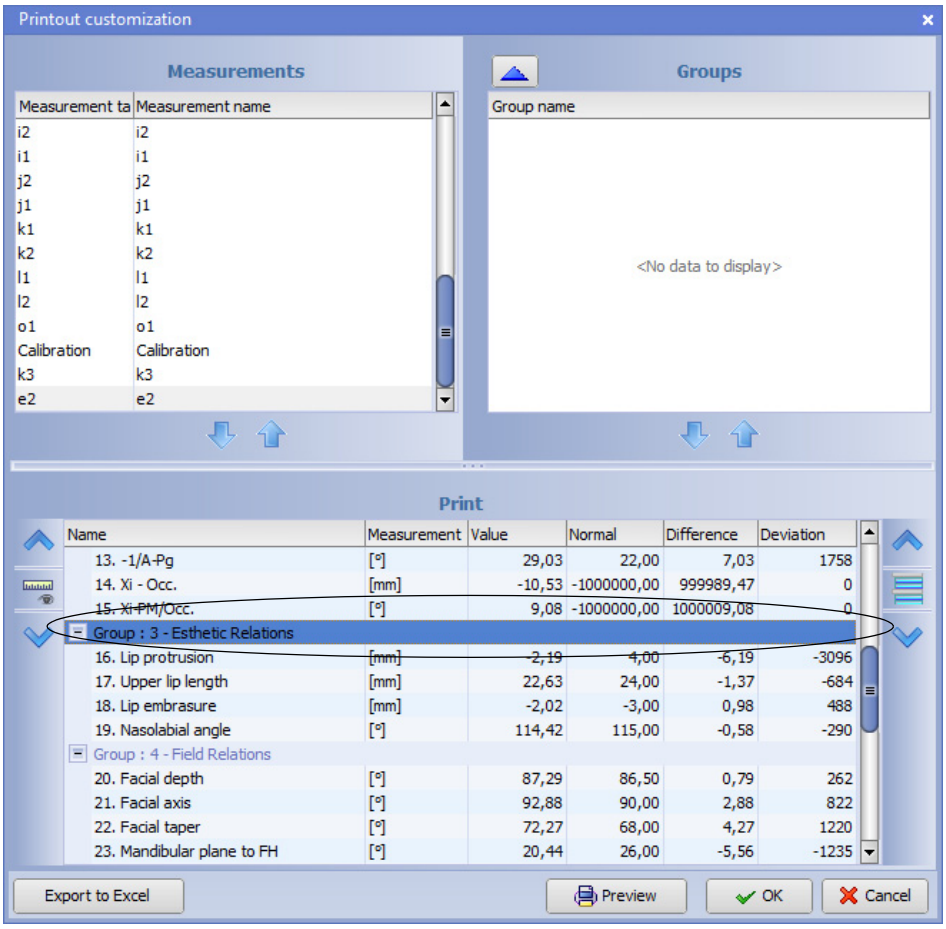
In the *Groups* field are listed all the available groups.

The *Print* field shows which measurements and groups have been selected for the current printout.



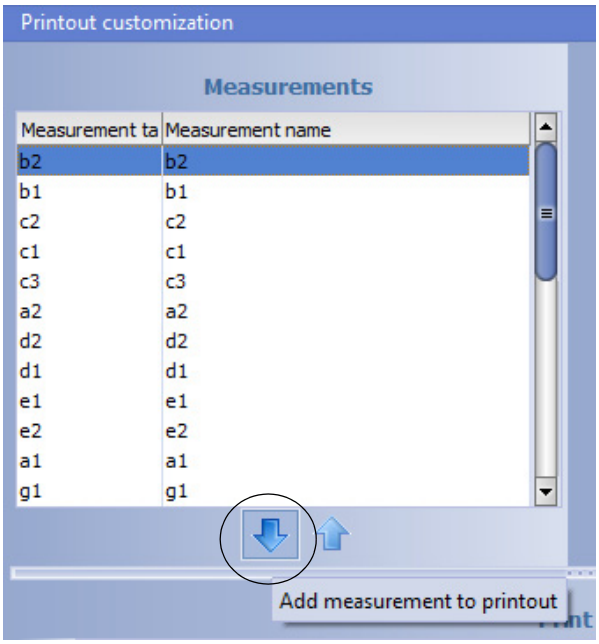
8.5.1 Adding measurements to groups

1. In the *Print* field select the group to which you want to add the measurement

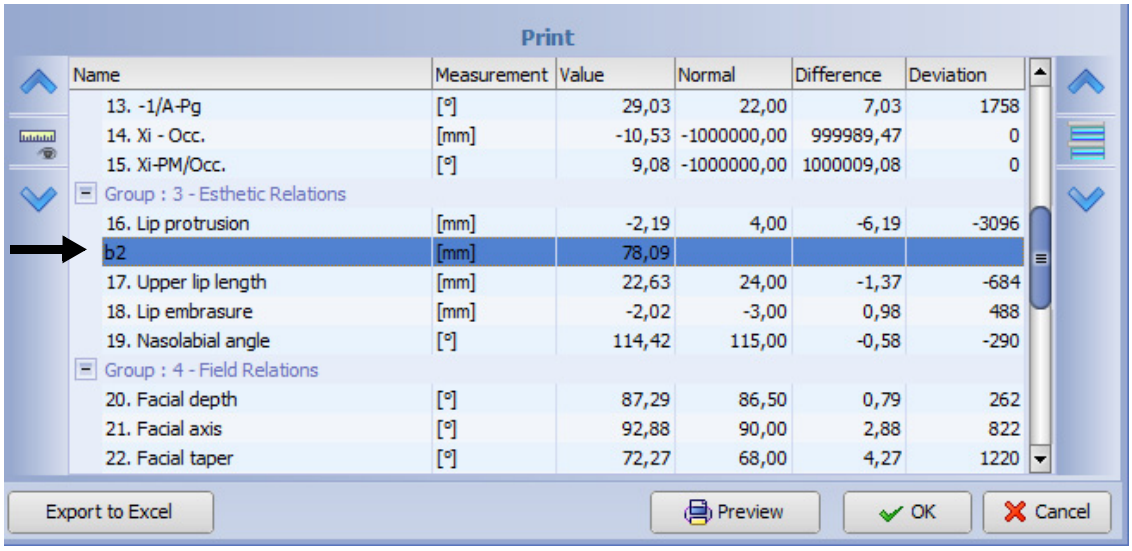


2. In the *Measurements* field select the measurement you want to add to the printout.

3. Click the arrow pointing downwards.

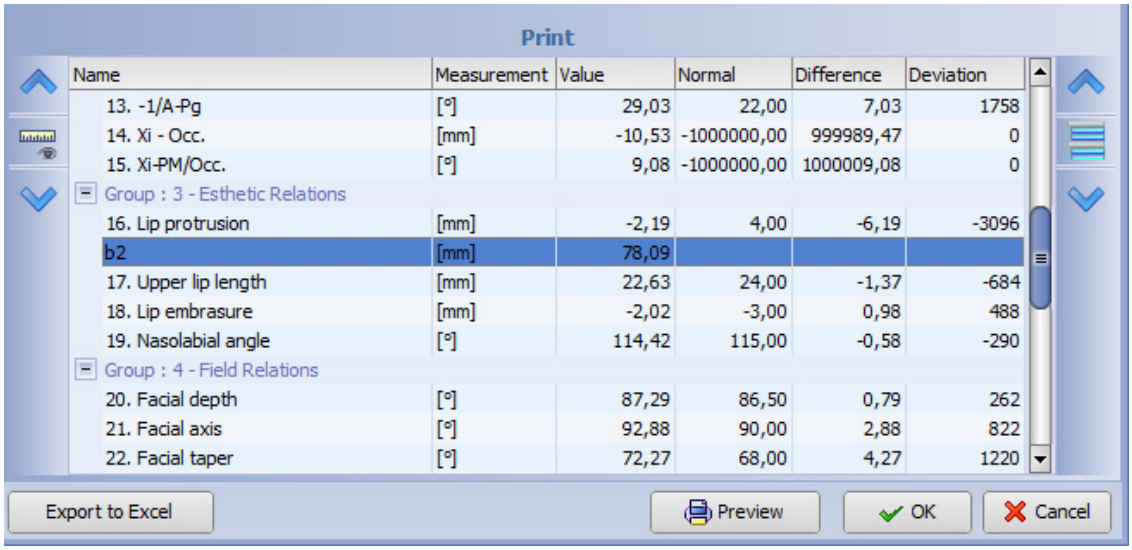


4. The selected measurement will now show in the *Print* field under the selected group.

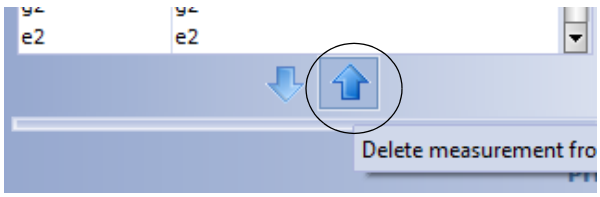

Print
Name
Measurement
Value
Normal
Difference
Deviation
13. -1/A-Pg [°] 29,03 22,00 7,03 1758
14. Xi - Occ. [mm] -10,53 -1000000,00 999989,47 0
15. Xi-PM/Occ. [°] 9,08 -1000000,00 1000009,08 0
Group : 3 - Esthetic Relations
16. Lip protrusion [mm] -2,19 4,00 -6,19 -3096
b2 [mm] 78,09
17. Upper lip length [mm] 22,63 24,00 -1,37 -684
18. Lip embrasure [mm] -2,02 -3,00 0,98 488
19. Nasolabial angle [°] 114,42 115,00 -0,58 -290
Group : 4 - Field Relations
20. Facial depth [°] 87,29 86,50 0,79 262
21. Facial axis [°] 92,88 90,00 2,88 822
22. Facial taper [°] 72,27 68,00 4,27 1220
Export to Excel
Preview
OK
Cancel

8.5.2 Deleting measurements from groups

1. In the *Print* field select the measurement you want to delete from the printout.


Print
Name
Measurement
Value
Normal
Difference
Deviation
13. -1/A-Pg [°] 29,03 22,00 7,03 1758
14. Xi - Occ. [mm] -10,53 -1000000,00 999989,47 0
15. Xi-PM/Occ. [°] 9,08 -1000000,00 1000009,08 0
Group : 3 - Esthetic Relations
16. Lip protrusion [mm] -2,19 4,00 -6,19 -3096
b2 [mm] 78,09
17. Upper lip length [mm] 22,63 24,00 -1,37 -684
18. Lip embrasure [mm] -2,02 -3,00 0,98 488
19. Nasolabial angle [°] 114,42 115,00 -0,58 -290
Group : 4 - Field Relations
20. Facial depth [°] 87,29 86,50 0,79 262
21. Facial axis [°] 92,88 90,00 2,88 822
22. Facial taper [°] 72,27 68,00 4,27 1220
Export to Excel
Preview
OK
Cancel

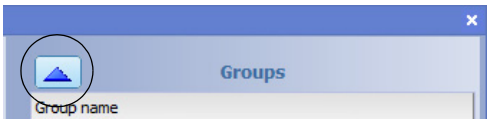
2. Click the arrow pointing upwards under the *Measurements* field.



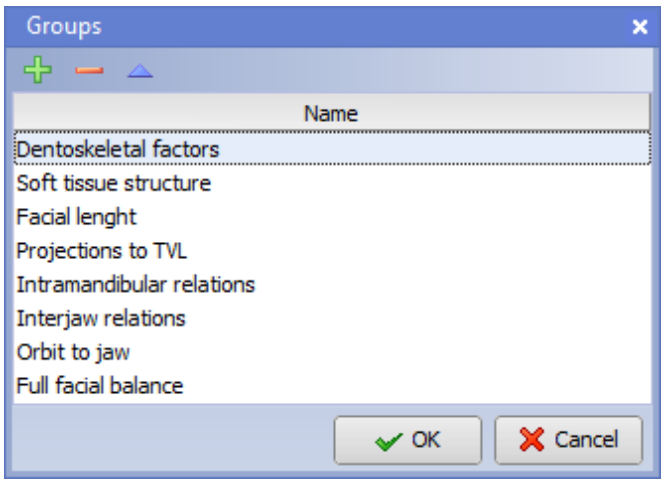
3. The selected measurement is now deleted from the printout and shows in the *Measurement* field.

8.5.3 Adding groups for printouts

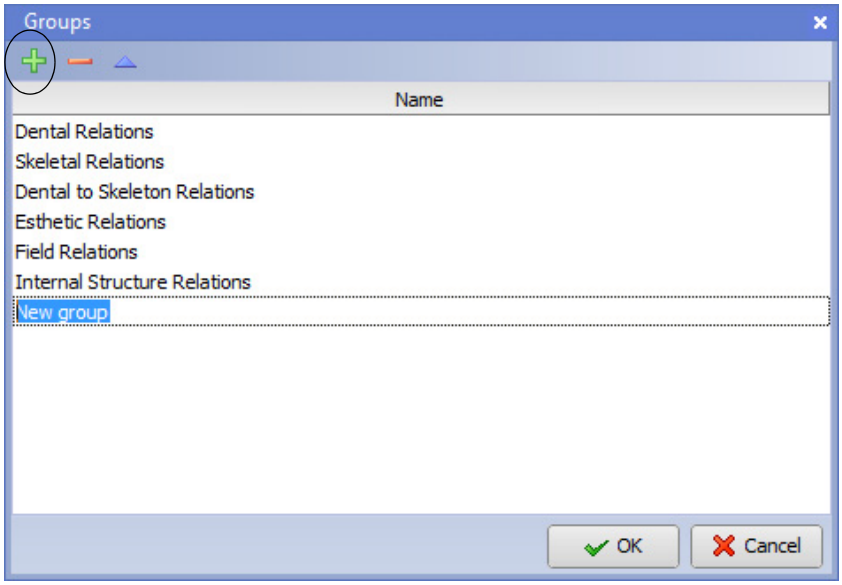
1. To open a window for editing groups click this button.



The following window opens.



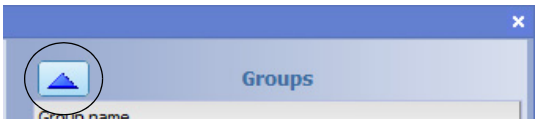
2. To add a new group click the + button, Enter the name for the new group and click **OK**.



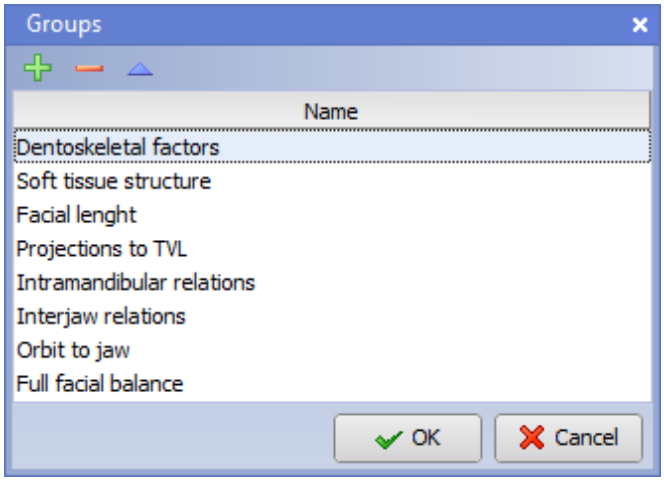
3. The new group will now show in the *Print* field.

8.5.4 Deleting groups from printouts

1. Open the *Groups* window by clicking this button.



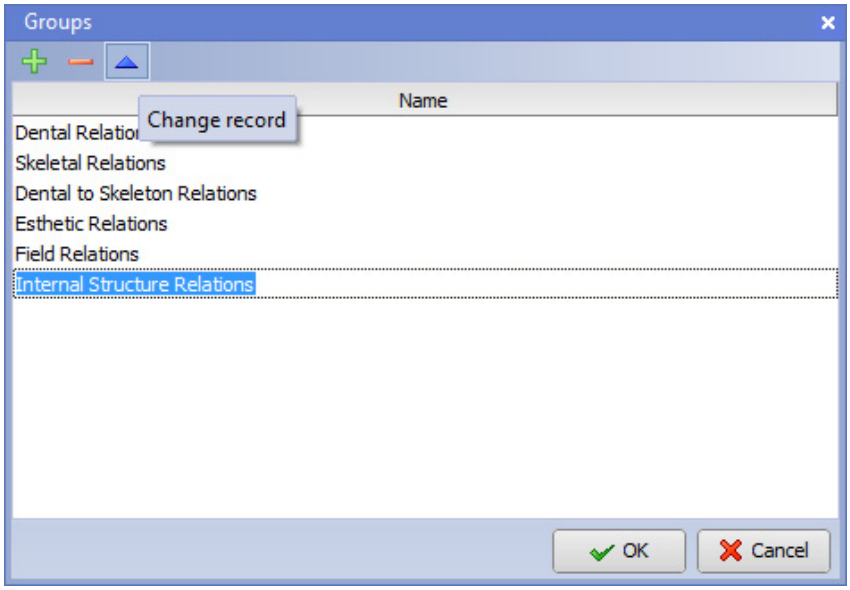
2. In the following window select the group you want to delete in the list and click the button



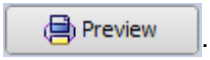
3. The deleted group does no longer show in the *Print* field.

8.5.5 Editing groups in printouts

1. Select the group you want to edit and click this button.
2. In the following window enter the new name for the group.
3. Click **OK**.



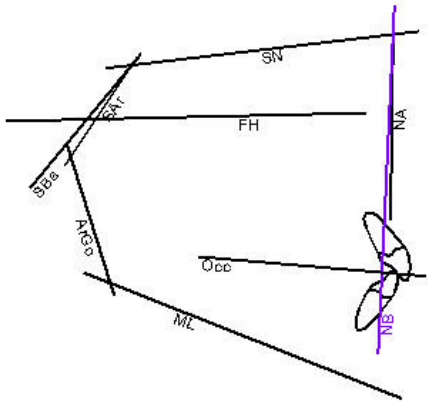
8.5.6 Print preview

To view a preview of the printout click this button 

.

The printout shows the radiograph, elements on print layer and measurement groups in table format.

Patient	Status **Beginning**
Patient, - 20	Date of birth **5.3.1992**
	Date of image **26.3.2012**
	Date of analysis **26.3.2012**



MEASUREMENT		*NORMAL VALUE*	*VALUE*	*DIFFERENCE*	*BIAS*
sagittal position of the maxilla					
1. SNA angle	°	82	83	0,5	|
sagittal position of the mandible					
2. FH/NPg angle	°	87	88	0,7	|
3. SNB angle	°	80	81	0,6	|
4. SNPg angle	°	80	82	2,3	|
sagittal relationship between maxilla and mandible					
5. ANB angle	°	3	2	-1,1	•|
6. AB/NPg angle	°	-5	-4	0,2	|
7. Convexity	mm	2	0	-1,7	|
axial inclination of teeth					
8. 1/SN angle	°	104	113	8,8	|
9. 1/NA angle	°	22	30	8,3	|
10. 1-NA distance	mm	4	7	2,6	|
11. 1/NB angle	°	25	32	7,2	|
12. 1-NB distance	mm	4	10	5,8	|
maxillary length					
13. ANS-PNS distance	mm	51	84	32,7	|
mandible length					
14. Xi-Pm distance	mm	65	98	32,9	|
15. Go-Ar distance	mm	43	53	9,7	|
16. Go-Pg distance	mm	71	116	45,1	|
facial height					
17. N-Gn distance	mm	112	141	29,1	|
18. N-ANS distance	mm	51	60	8,9	|
19. ANS-Gn distance	mm	61	82	20,6	|
facial relationships					
20. BaSN angle	°	131	136	5,3	|
21. ANS-Xi-Pg angle	°	47	43	-3,7	|
22. NPg/ML angle	°	68	69	1,4	|
23. Ar-Go-Gn angle	°	126	129	3,0	|
24. +1/-1 angle	°	130	119	-10,8	|

9 CREATING A CUSTOM ANALYSIS TYPE

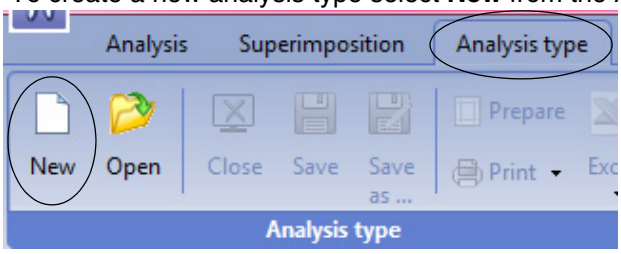
NOTE **If the user does not have admin rights or does not want to synchronise analysis types with server the analysis types are stored locally in the Romexis client computer folder /** ***client/cephmodule/analysistypes/*** **with a file name extension** ***_local*****. The admin user can later synchronize analysis types to server by removing the** ***_local*** **extension from the analysis type file name and starting and closing the Planmeca Romexis Cephalometric Analysis module. For more information see section 11.3.2 "Synchronising analysis types to the server" on page 86.**

NOTE **The synchronised analysis types are stored in the Romexis server folder** ***/server/share/AnalysisTypes,*** **see chapter 11 "SHARING AND BACKING UP ANALYSIS TYPES" on page 85 for more information.**

A custom analysis type can be created either by modifying a previous analysis type or from scratch.

9.1 Making an analysis by modifying a previous analysis

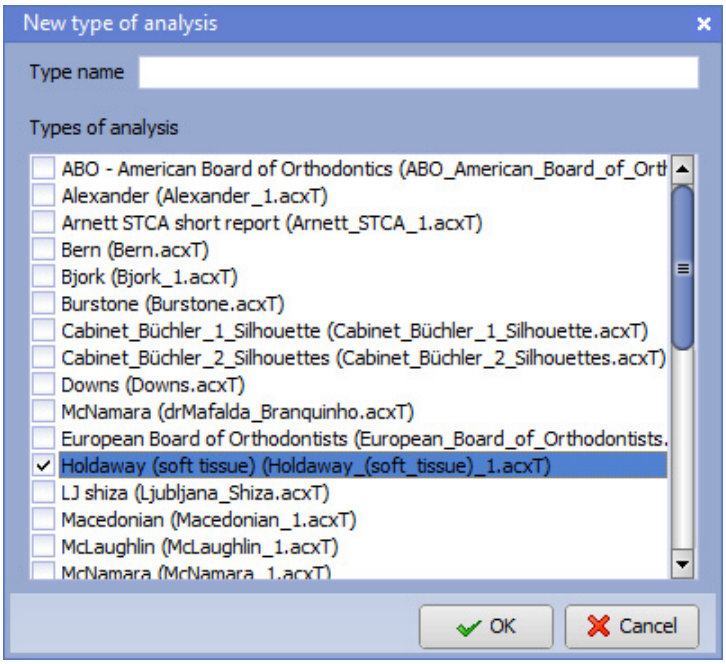
1. To create a new analysis type select **New** from the Analysis type tab.



The following window opens.

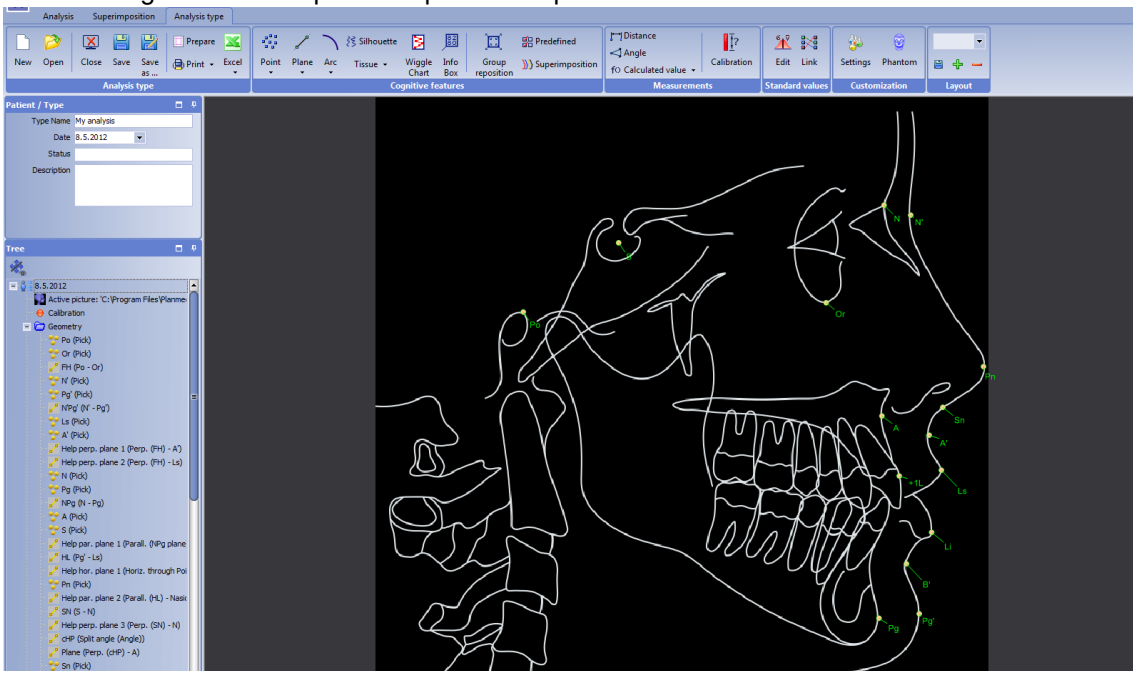
2. Enter the name for the New analysis type.

3. Select the desired analysis type from the list.



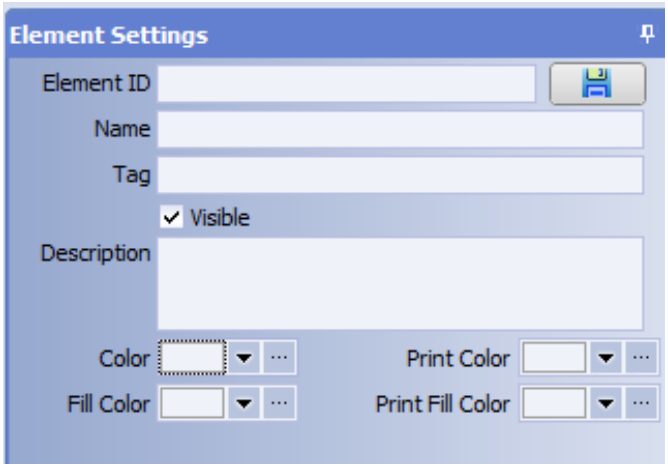
4. Enter a new name for the analysis and click OK

The following window with phantom picture is opened.



5. To switch views click the **Phantom** button.

9.2 Element settings



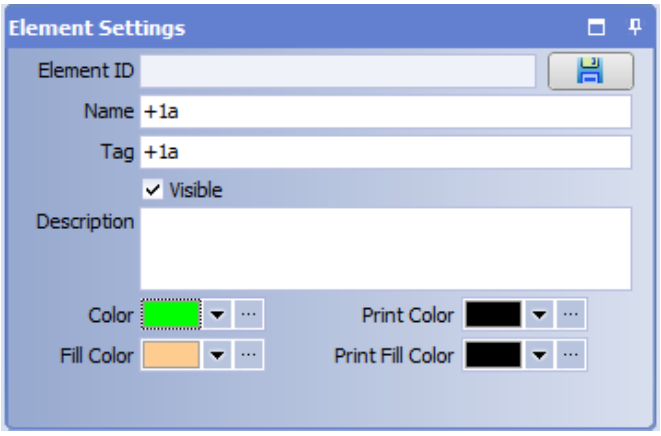
In the element settings window you can adjust the element ID, name tag, define whether it is visible in the analysis, add a description, adjust the colour or print colour of an element.

9.2.1 Storing elements to the predefined database

NOTE **The elements are stored in the folder */Romexis/client/cephmodule/PredefinedElements* on the client workstation. If the user wants to use the new elements on another computer the new elements should be copied to the same folder on the other workstation.**

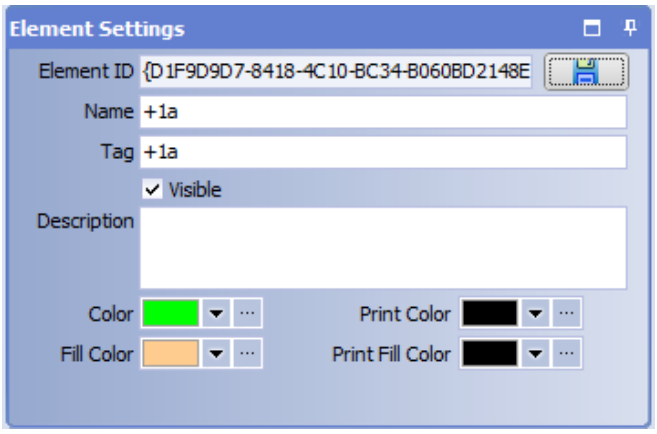
Each newly created element can be stored into the Predefined database by clicking this button in the *Element Settings* window.

If the element has not been saved to predefined elements the Element ID field is empty.

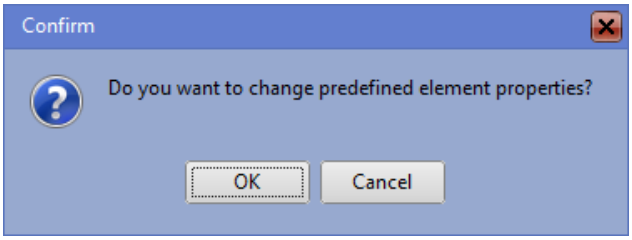


When an element is saved, it is assigned a unique Element ID.

Should you choose to save a more complex element (or measurement), also all its constituent elements that have not been saved as predefined will be saved.



After saving the predefined element it can be updated. Confirm the update by clicking **OK**.

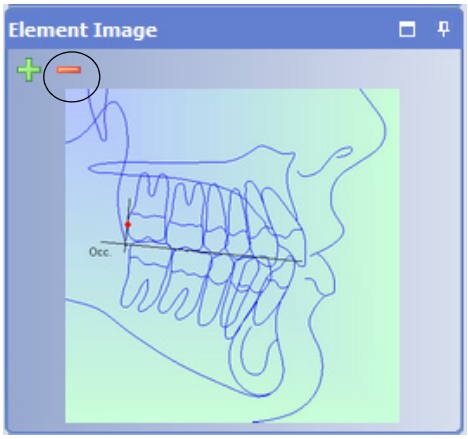


9.2.2 Adding and deleting element images

To add a new element image for a new element in the analysis click the + button in the *Element Image* window.

In the following window browse to the folder where the image is stored.
Select the image and click **OK**.

To delete an element image from the analysis click the - button.



9.3 Creating an analysis from the beginning

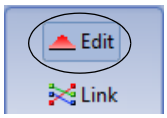
Repeat the procedure in the above section but do **not** choose any analysis type.

9.4 Modifying an existing analysis type

1. Open an existing analysis type in the analysis type tab.
2. The analysis opens and can now be freely modified.

NOTE **For more information on how to share or not to share the updated analysis types with other users see section 11.3.2 “Synchronising analysis types to the server” on page 86.**

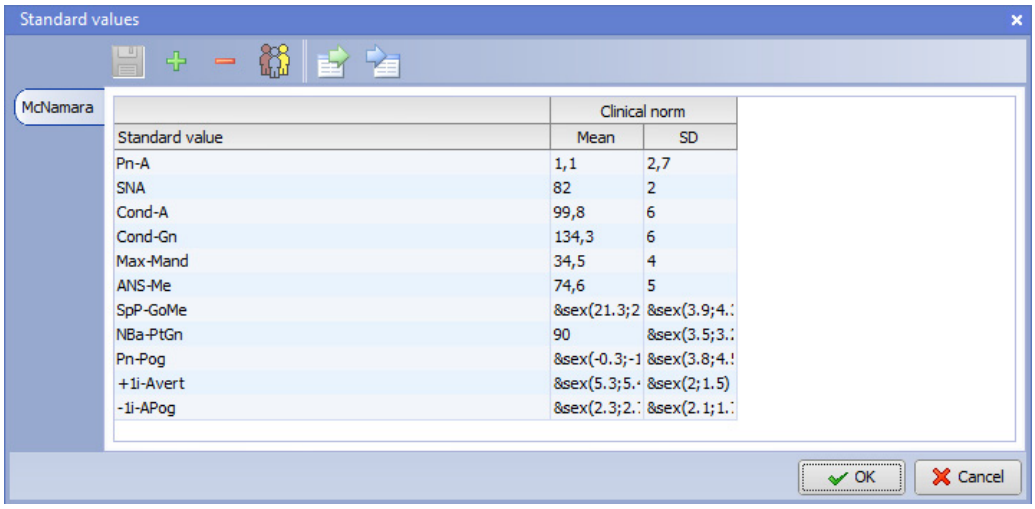
10 EDITING STANDARD VALUES

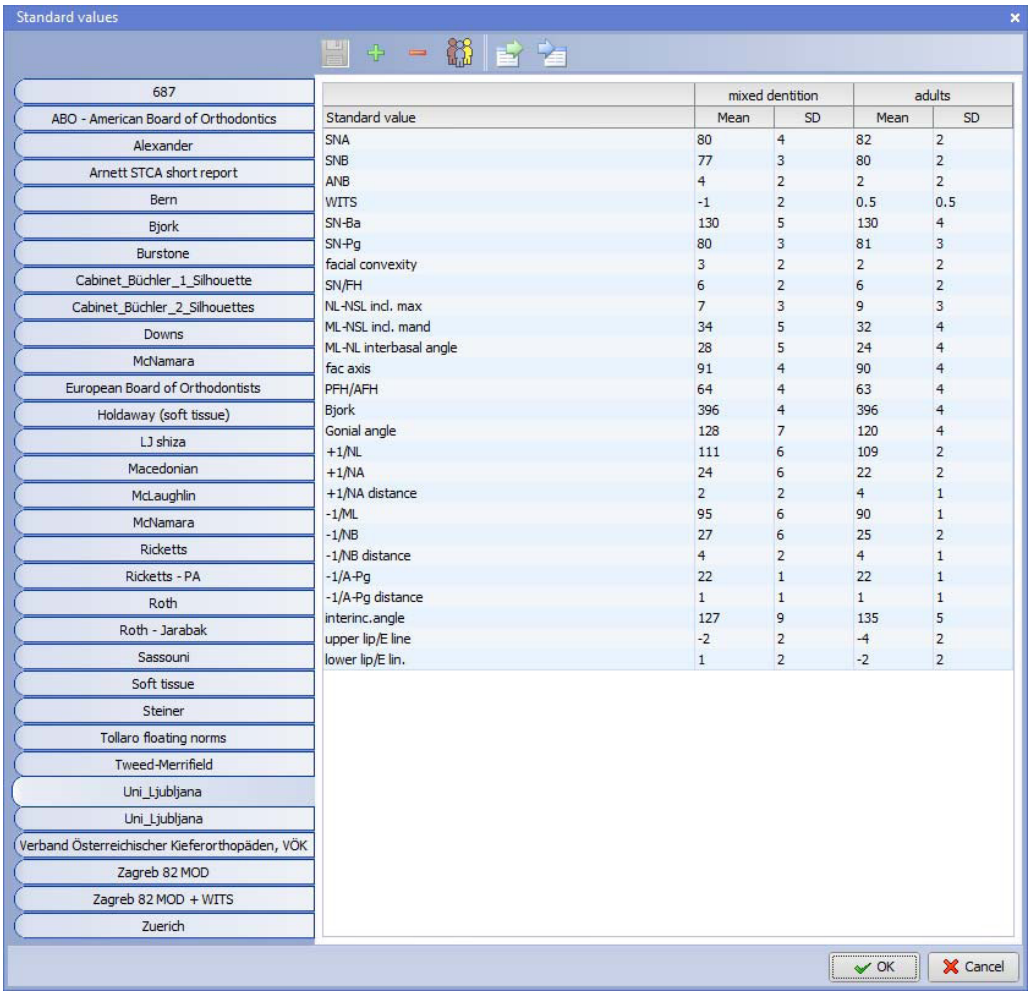


To open the window for editing standard values and deviations click the Edit button.

NOTE **The content in the window may vary depending on from which tab the *Edit standard values* window is opened.**

NOTE **When modifying the values from the *Analysis* tab the changes will affect only the current analysis. To permanently modify the values the window must be opened from the *Analysis type* tab.Set standard values for each analysis separately.**





10.1 Using the buttons in the *Standard values* window

Use the following buttons to:

Save table

Add a standard value

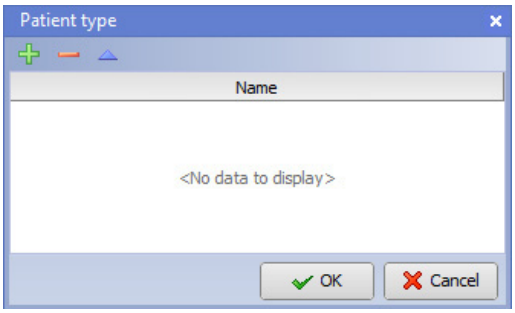
Delete a standard value

Add a new patient type (for example mixed dentition, adult,…)

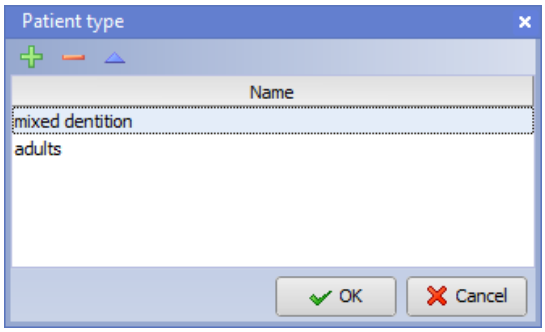
Export to Excel

Import from Excel

To add standard values in an analysis at least one patient type need to added, by selecting this button. New window is opened:

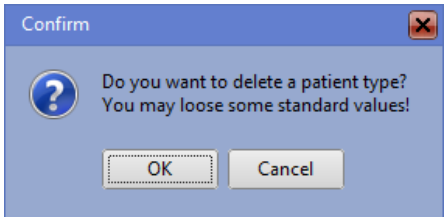


To add new patient type click this button and enter name for patient type. When patient type(s) have been added you can start adding standard values.



To delete patient types select the type you would like to delete and click this button.

In the following window select **OK**.



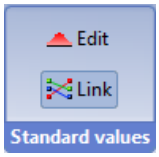
NOTE **Newly added patient type(s), will show in standard value window.**

	mixed dentition		adults	
Standard value	Mean	SD	Mean	SD

To add standard value, simply click in each cell and enter data.

NOTE **You can add standard values manually or import an excel document with these values.**

10.2 Linking standard values with analysis measurements



To open a window for linking standard values and standard deviations with measurements click the **Link** button.

In the *Measurements* field are listed all measurements included in the analysis or analysis type. In the Standard values field are listed all standard values included in the analysis or analysis type.

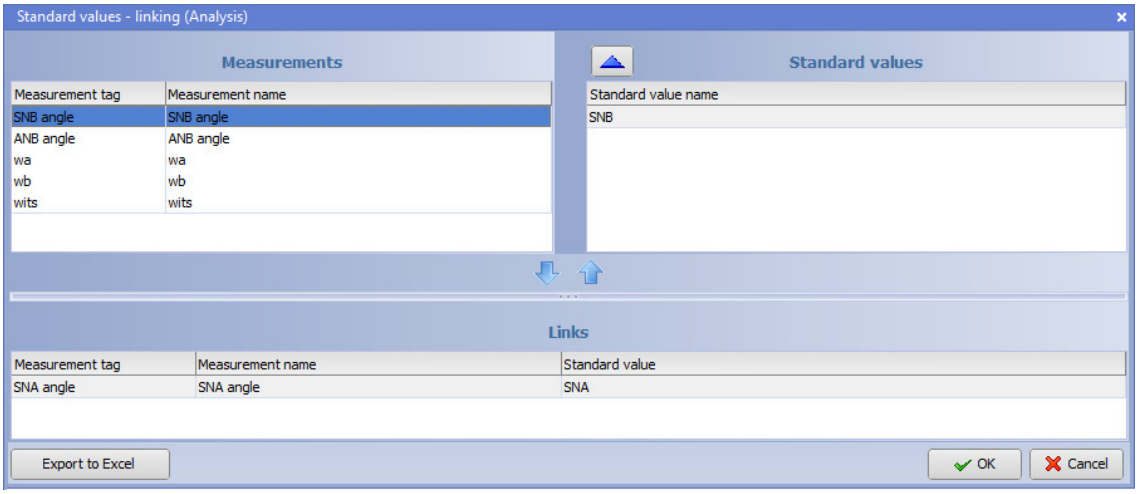
To open the window for editing mean values, click this button.
A new window with standard values appears. For detailed information see section10.2.1 “Editing standard values from Standard values window” on page 84.

To link measurement with standard value, select the measurement in the *Measurements* field on the left and the standard value in the Standard values field on the right.

Click the blue arrow pointing downwards to link measurement with standard value.

To remove a link select the measurement and click this button.

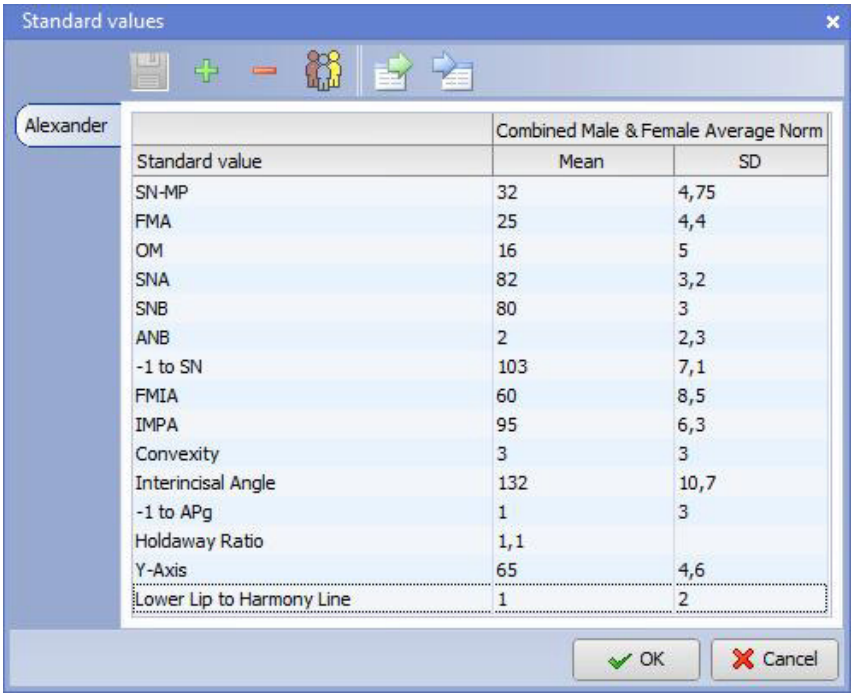
You can also export linked standard values by selecting Export to Excel button on bottom side.



10.2.1 Editing standard values from *Standard values* window

Once this button is clicked in *Standard values* window, a new window where you can edit standard values, and patient type appears

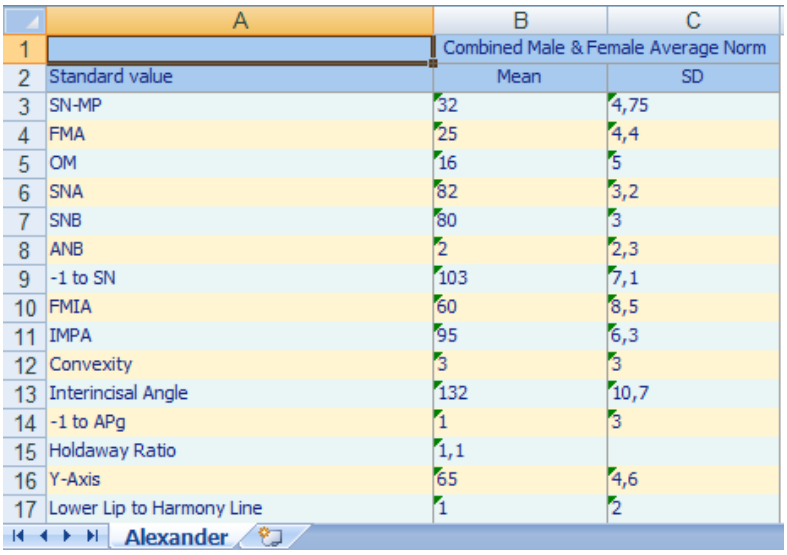
The values can also be exported/imported to excel sheet via for export and for import from excel sheet.



To export values to a spreadsheet application click this button.

Select the name and location where to save the exported values and under what will they be exported.

Click **Save**.



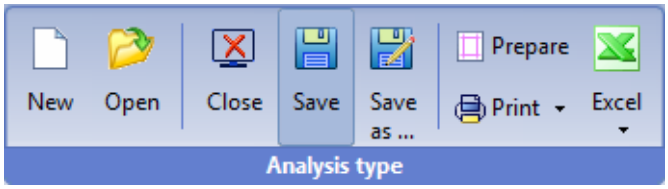
	A	B	C
1		Combined Male & Female Average Norm	
2	Standard value	Mean	SD
3	SN-MP	32	4,75
4	FMA	25	4,4
5	OM	16	5
6	SNA	82	3,2
7	SNB	80	3
8	ANB	2	2,3
9	-1 to SN	103	7,1
10	FMIA	60	8,5
11	IMPA	95	6,3
12	Convexity	3	3
13	Interincisal Angle	132	10,7
14	-1 to APg	1	3
15	Holdaway Ratio	1,1	
16	Y-Axis	65	4,6
17	Lower Lip to Harmony Line	1	2

Alexander

To import values from Excel sheet click this button. System will then offer you to select previously exported excel file (or any other) by selecting and open it. After importing standard values and deviations, *Standard values* window will be populated with them.

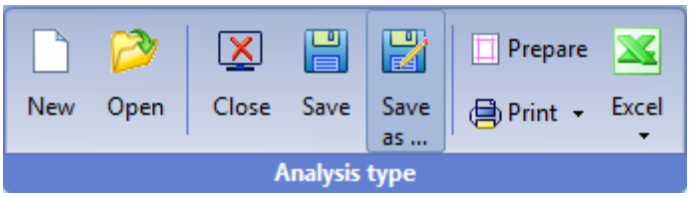
11 SHARING AND BACKING UP ANALYSIS TYPES

To save the analysis type under the name you specified before creating it click the **Save** button.



To save the analysis with different name click **Save as** and enter a new name for the analysis.

Click **OK**.



11.1 Backing up instruction for the regular user

When an analysis type is edited or a new analysis type is created by a regular user without admin permissions, the analysis type is saved as a local copy to the client workstation under the folder */Program Files/Planmeca/Romexis/client/cephmodule/AnalysisTypes*.

To save a back-up copy of the analysis type a back-up copy of the folder needs to be taken.

11.2 Backing up instruction for the admin user

When an analysis type is edited or a new analysis type is created by the admin user the Planmeca Romexis prompts when closing the Cephalometric Analysis module whether to update the edited analysis types to the server one by one.

- By selecting *Yes* the updated analysis type is uploaded to the server and the existing analysis type at the server are updated with the client versions.

  The analysis types are saved to the */Program Files/Planmeca/Romexis/Server/share/AnalysisTypes* folder on the Planmeca Romexis server computer. To store back-up copies of the analysis types a back-up copy of the folder is required.

- By selecting *No* the new and edited analysis types are saved as local copies (with the file extension *_local* in the client workstation folder (*/Program Files/Planmeca/Romexis/client/cephmodule/AnalysisTypes*)).

11.3 Manually synchronising analysis types to server

NOTE **If the user does not have admin rights or does not want to synchronise analysis types with server the analysis types are stored locally in the Planmeca Romexis client computer folder *<u>/ProgramFiles/Planmeca/Romexis/client/cephmodule/AnalysisTypes</u>* with a file name extension *_local*. The admin user can later synchronize analysis types to server by removing the *_local* extension from the analysis type filename. Note that this should be done while the module is running. The analysis types are synchronised to the server when the module is closed.**

11.3.1 Synchronising analysis types from the server

When the Cephalometric Analysis module is started, the analysis types are synchronized from the server to the client, the client copies will be overwritten (excluding the analysis types with _local extension).

11.3.2 Synchronising analysis types to the server

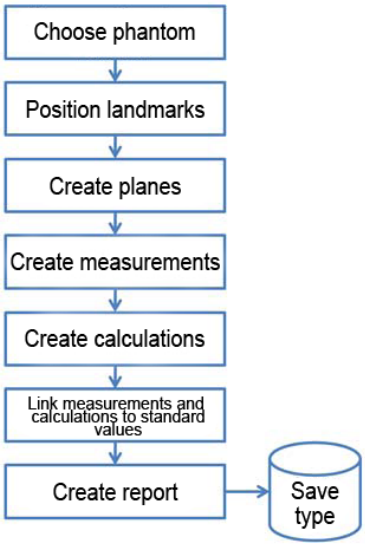
When closing the Cephalometric analysis module with Admin user, the analysis types without the *_local* extension are again scanned.

If the local files differ from the files on the server the software prompts the user if the server files should be overwritten with the local files.

- If the user answers YES the analysis type on the server will be updated with the analysis type on the local workstation
- If the user answers NO the analysis type on the server wont be updated with the analysis type on the local workstation and the analysis type will be stored locally with the extension **_local**.

12 CREATING A CUSTOM ANALYSIS TYPE FROM THE BEGINNING (EXAMPLE)

Below you can see the process for creating an analysis type.



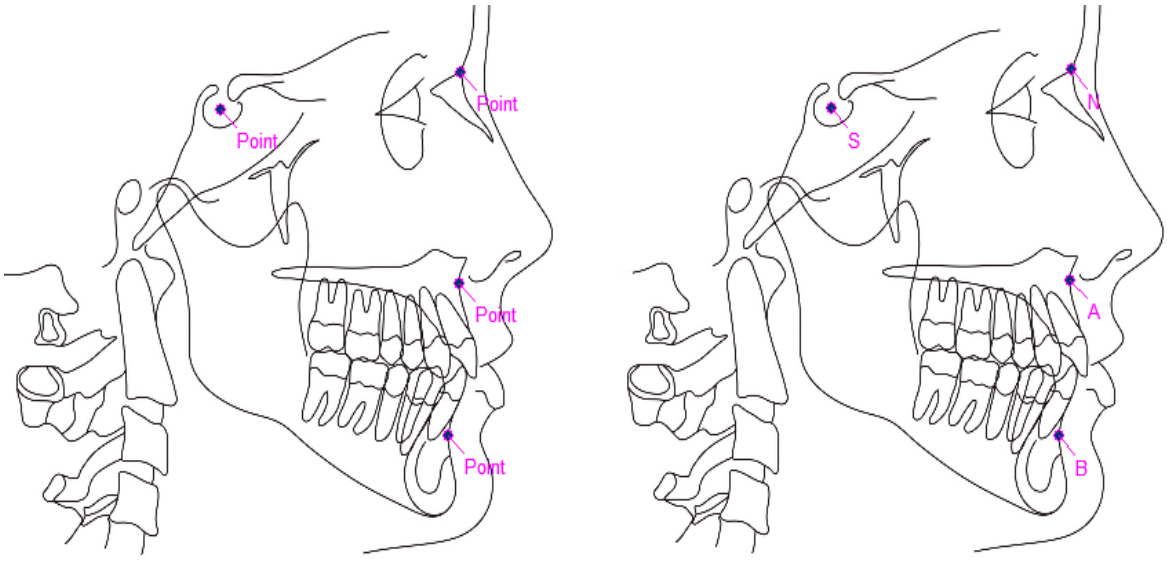
12.1 Choosing phantom

To display a lateral view of the phantom image, click **Phantom** button.

12.2 Positioning landmarks

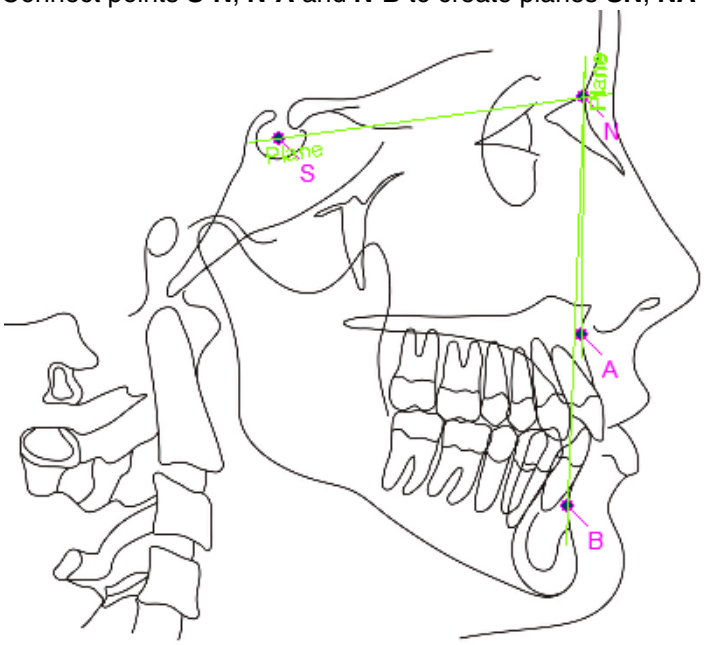
1. Set four single points.
2. Rename the points as follows:

   Sella Turcica: **S** Nasion: **N** Point A: **A** Point B: **B**



12.3 Creating planes

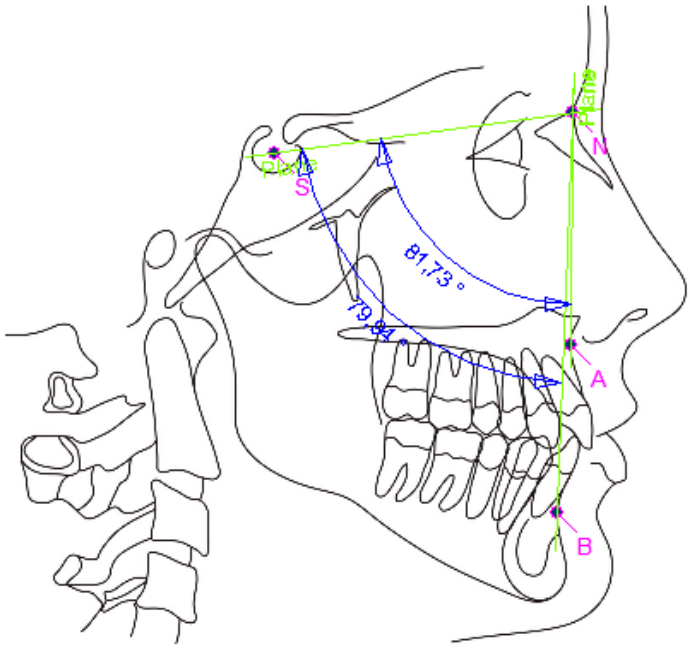
Connect points **S-N**, **N-A** and **N-B** to create planes **SN**, **NA** and **NB**.



12.4 Creating measurements

Set two angles between the created planes (that is, between planes SN and NA; and between planes SN and NB). To select adjacent angles, use <Ctrl> and click the corresponding adjacent angle. Enter names for measurements SNA and SNB.

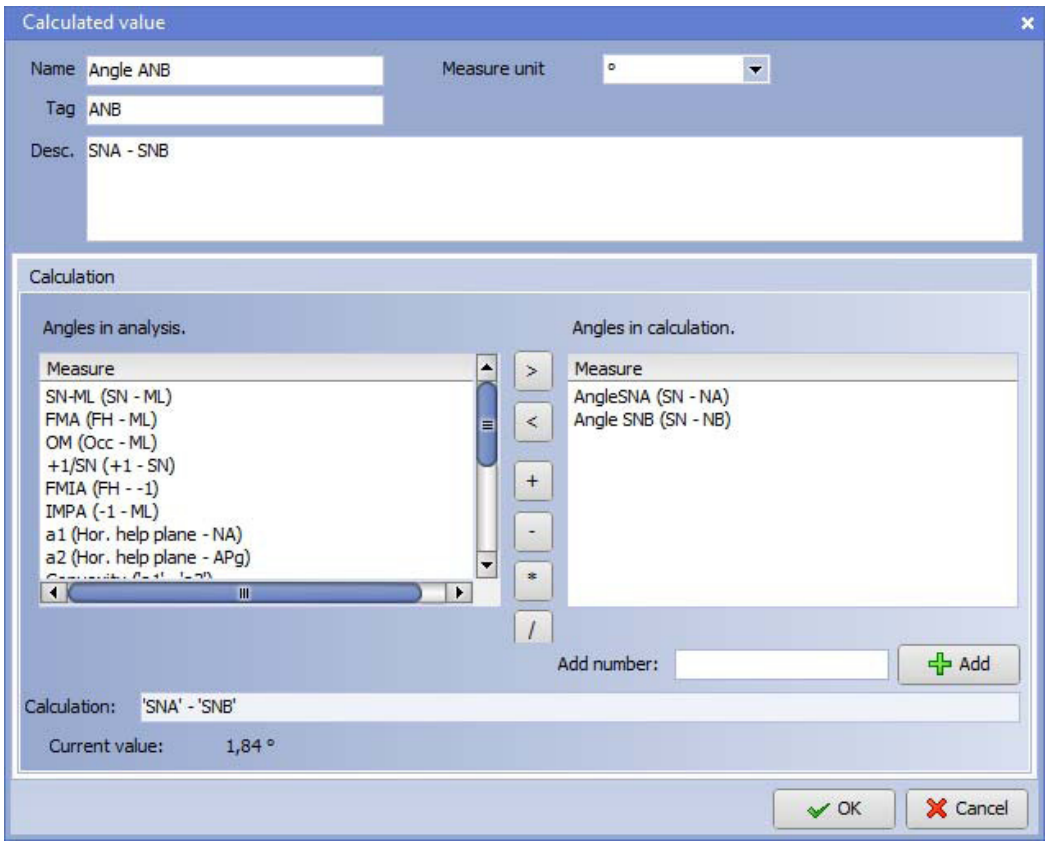
Name	**SNA**	**SNB**
Label	**SNA**	**SNB**



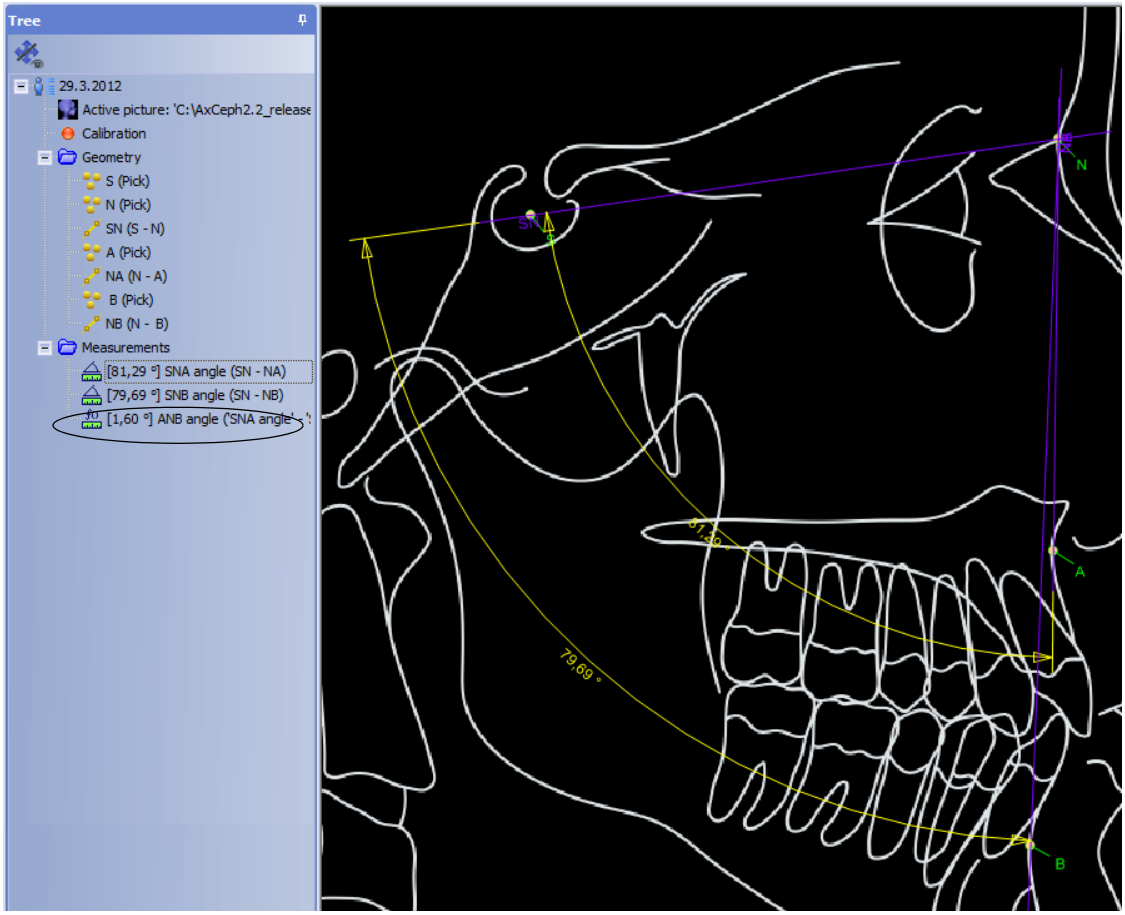
12.5 Creating calculations

Start by entering the name, label, and the unit of measurement. Calculate in the following way:

1. Select SNA.
2. Double-click it or click the > button to move it to the *Angles in calculation* field.
3. Click this button - .
4. Select SNB.
5. Double-click it or click > to move it to the right-hand side box.
6. Confirm the result by clicking **OK**.



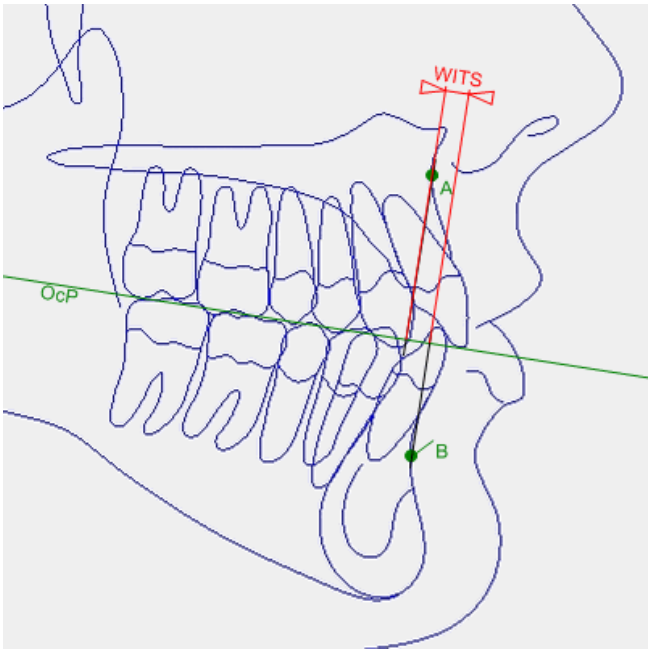
The new ANB angle calculation now shows in the tree under Measurements and in the image.



12.5.1 Measuring WITS appraisal (example)

The method entails drawing perpendicular planes from points A and B on the maxilla and mandible, respectively, onto the occlusal plane. The points of contact of the perpendicular planes onto the occlusal plane are labelled A and B, respectively. The Wits appraisal is the distance between the two planes.

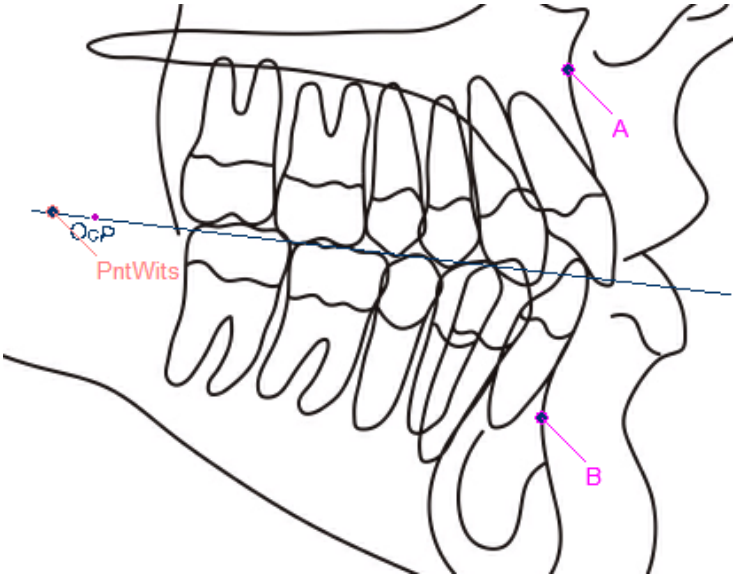
The appraisal can be assigned positive or negative value. In the illustrated case the value is negative. If the plane crossing the point A goes through the point B the value is positive.



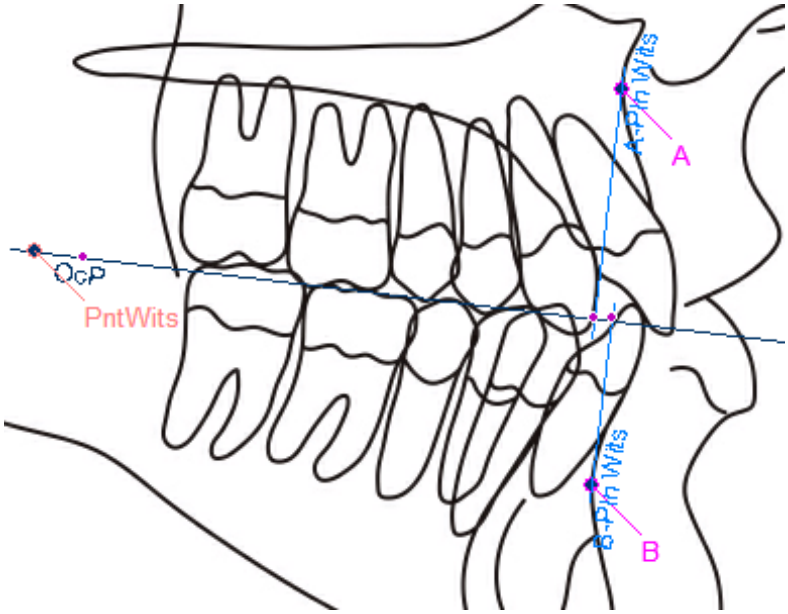
Occlusal plane

Proceed as follows:

1. The analysis includes points A and B.
2. Select plane and set it in the direction of the occlusal plane as shown on the image.
3. Enter the name **Ocp**.
4. Click on a point and place it on the occlusal plane. Enter the name **PntWits**.



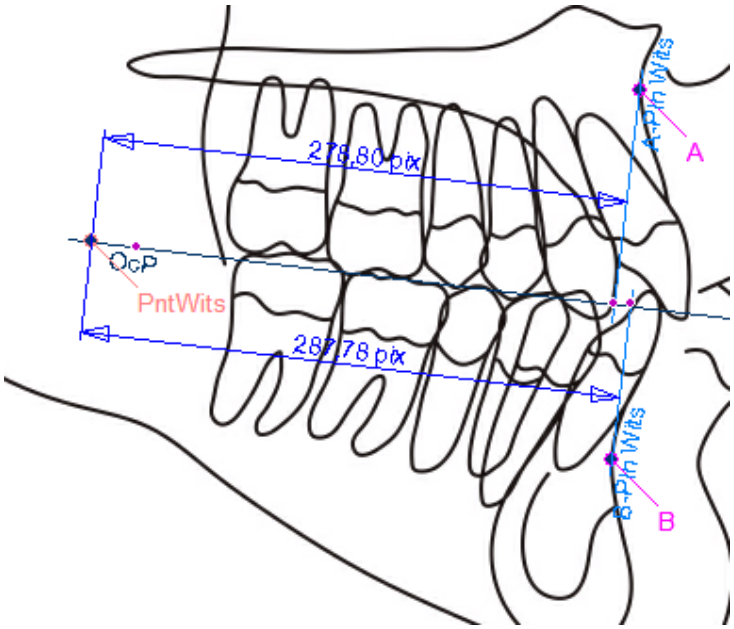
5. Set planes perpendicular to the occlusal plane (Ocp) through points A and B.



6. Enter names **A-Pln Wits** and **B-Pln Wits**.

7. Create two distance measurements:

- from point *PntWits* to plane ***A-Pln Wits***. Name the distance as **wa**
- from point *PntWits* to plane **B-Pln Wits** and enter the name **wb**



8. In the following window enter the name, tag, measurement unit and equation.

9. Select **wa**:

- Double-click it

  or

- Click this button to move it to the *Measurement in calculation* field.

10. Click this button.

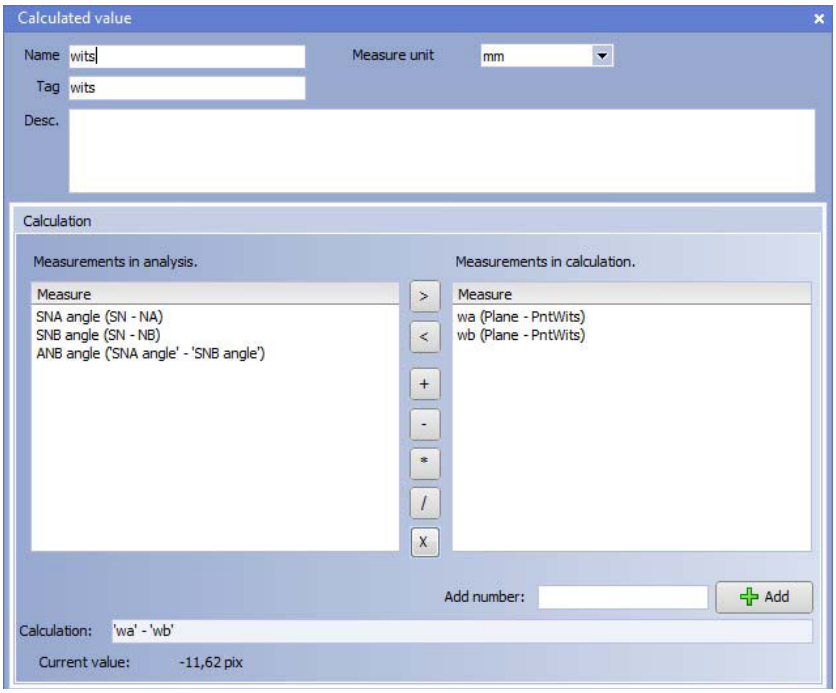
11. Select **wb**:

- Double-click it

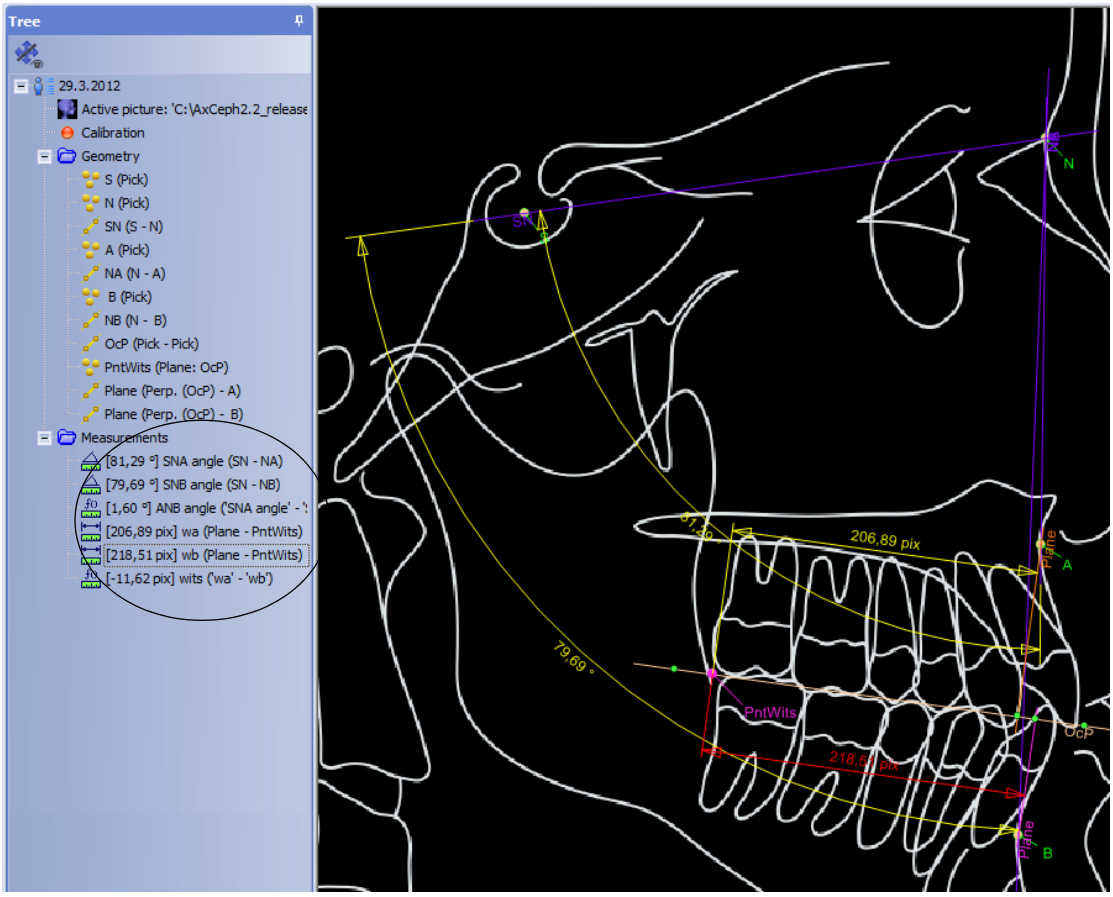
or

- Click this button to move it to the *Measurement in calculation* field.

12. To finish click **OK**.

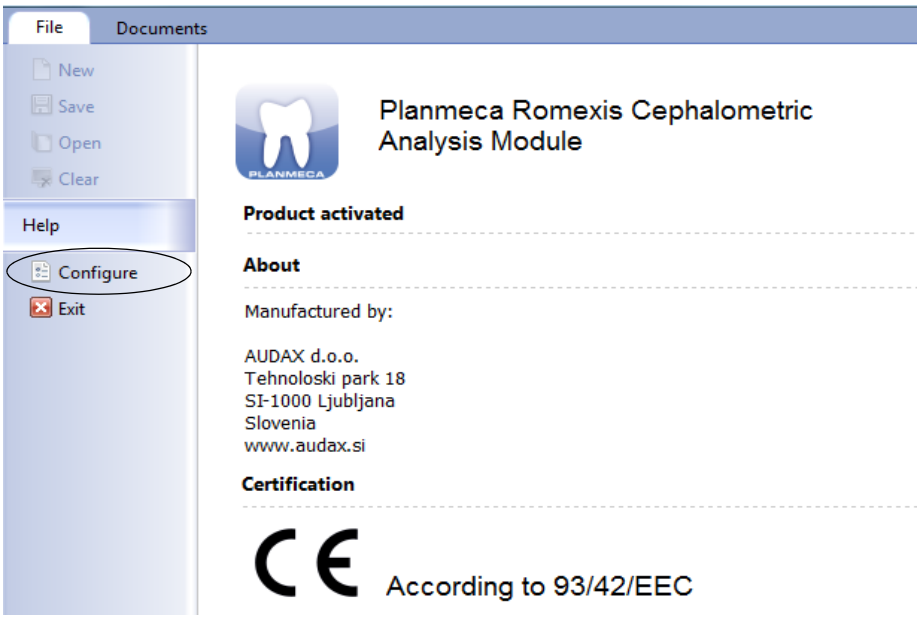


13. The new measurement are now shown in the image and in the tree.

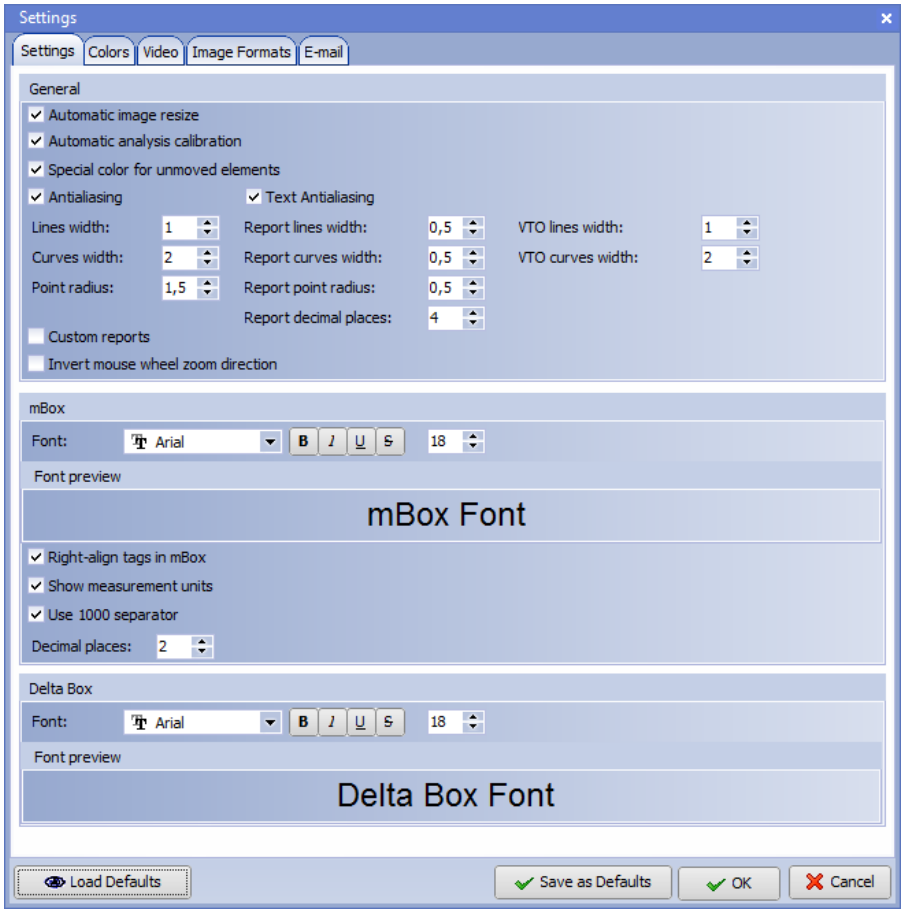


13 SETTINGS

To access the *Settings* dialogue go to File tab click the **Configure** button.



13.1 Settings



13.1.1 General

Anti-aliasing is a technique of minimizing the distortion artifacts known as aliasing when representing a high-resolution image at a lower resolution.

13.1.2 InfoBox

In this field you can define the font properties (type, formats and size) used in the InfoBox texts.

13.2 Colours

The colour of an element type in an analysis can be modified.

1. Go to the *Colors* tab.
2. From the *Element* column select the element type you want to modify.
3. In the *Color* column select the colour you want to use for the element type and click **OK**.

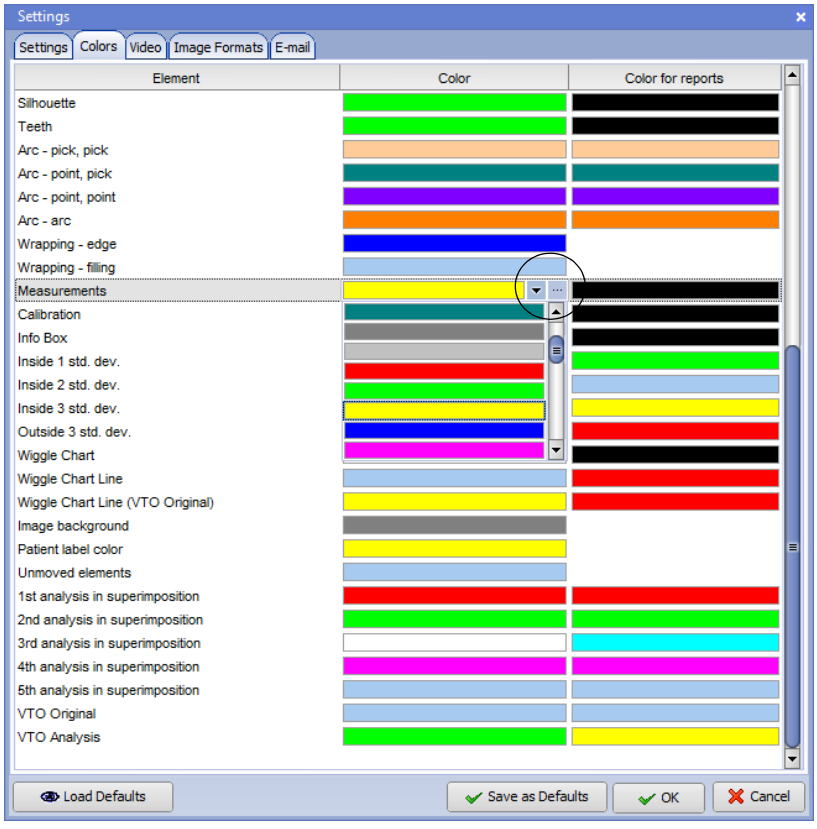
NOTE **Colours can be set separately for reports.**

To change the default colour of a certain element click the colour you want to change.

Choose the new default colour from the drop-down menu,

OR

Click the square button next to the menu.



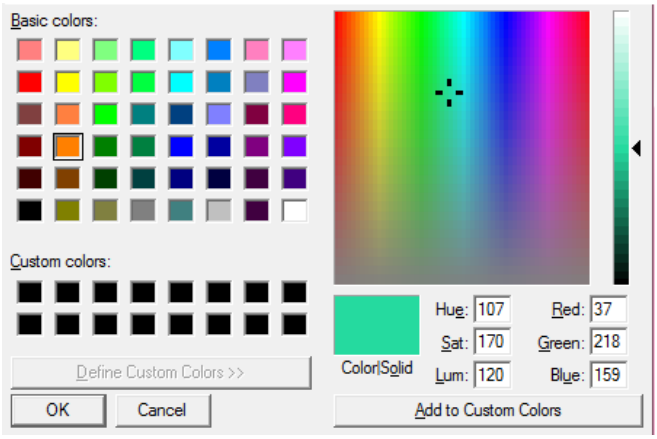
In the opening window select the colour by clicking in the colour matrix window. Also hue, saturation, and luminosity of the colour as well as red, green and blue tones can be adjusted.

When you are satisfied with the new colour click the **Add to Custom Colors** button.

The color now appears in the custom colors window.

To save the settings and quit the window click **OK**. To discard the new settings, click *Cancel*.

To define new custom colours click the **Define Custom Colors** button.



To set new default colour, select a custom or basic colour and click **OK.**

In the following window click the **Save as defaults** button.

13.3 Image formats

NOTE **When using Planmeca X-ray units for image acquisition it is not necessary to define image formats.**

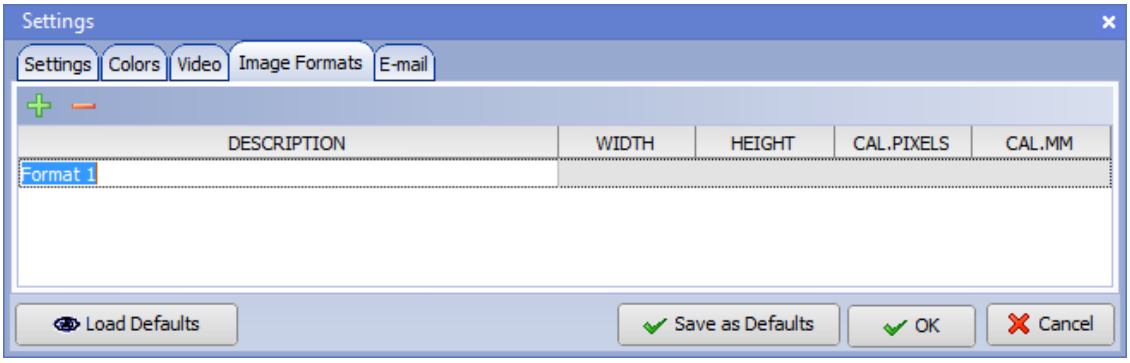
Image format list includes a list of calibration information for different size images.

To add a new image click the + button and enter the name of the image t in the description field.

Define width, height, calculated pixels and millimetres.

Click **OK**.

To save the formats as defaults click the **Save as Defaults** button.



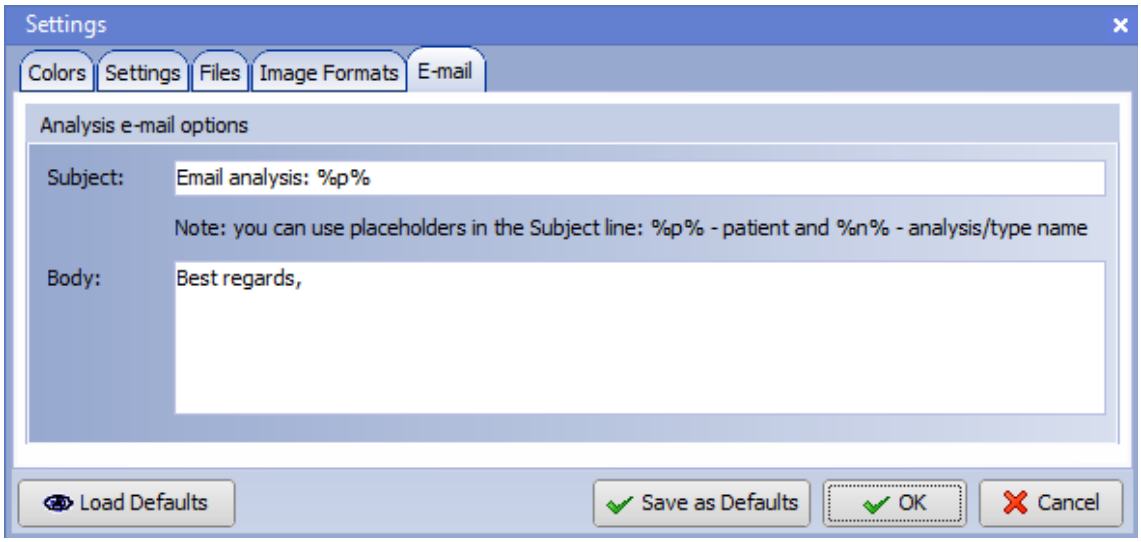
13.4 E-mail

To avoid entering the data separately for every e-mail you can create a template containing information repeating in all e-mails.

Fill in the *Subject* and *Body* field with the information repeating frequently.

The text in the fields can be modified at any time.

To save the e-mail template as default click the **Save as Defaults** button.



PLANMECA

Planmeca Oy | Asentajankatu 6 | 00880 Helsinki | Finland

tel. +358 20 7795 500 | fax +358 20 7795 555 | sales@planmeca.com | www.planmeca.com

PLANMECA Oy's Quality System
ISO 9001
Certificate awarded in 1994 by Det Norske Veritas
fulfils the highest acknowledged international standards

PLANMECA Oy's Environmental Management System
ISO 14001
Certificate awarded in 2000 by Det Norske Veritas
fulfils the highest acknowledged international standards